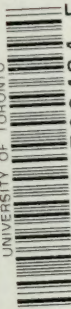


UNIVERSITY OF TORONTO



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# ITALY

## POPULAR ACCOUNT OF THE COUNTRY IT'S PEOPLE AND IT'S INSTITUTIONS











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ITALY







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# ITALY

A POPULAR ACCOUNT OF THE COUNTRY  
ITS PEOPLE AND ITS INSTITUTIONS  
(INCLUDING MALTA AND  
SARDINIA)

BY  
PROFESSOR W. DEECKE

WITH NUMEROUS MAPS AND ILLUSTRATIONS

TRANSLATED BY  
H. A. NESBITT M.A

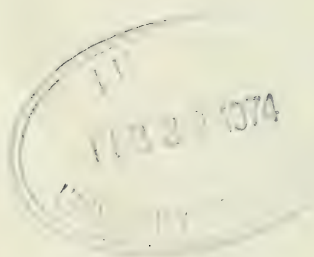


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## Translator's Preface

IN introducing this work to the notice of those interested in the extension of our knowledge of foreign countries, I may be allowed to say a few words as to what seem to me its merits. It aims at giving a concise and comprehensive account of Italy, it enumerates its natural beauties and advantages, and shows how all these are connected with its geological formation ; it brings before us the stately Po travelling in its self-made bed above the level of the adjacent plain, the meandering Volturno alternately lengthening its course by new curves and shortening it by substituting the chord for the arc in old ones, the rushing Ofanto, with its ruinous floods, and the mighty falls of the Tosa. It tells of the bridge that once stretched from Sicily to Africa, and how, when the elephants that came by it were cut off by its destruction, they dwindled in size, till they became extinct. It describes the mighty flow of lava from Vesuvius and Etna, destructive at first, but fertilizing after many years. It gives a sketch of the history of the peninsula, telling of the long misgovernment by foreign and native tyrants, and how its long delayed and hardly-won unity failed to bring about all the prosperity that might have been expected, owing to short-sighted or half-hearted policy, and to the real or supposed necessity of keeping up an expensive war establishment, and thus burdening the country with taxes on everything that could be taxed. It shows how real progress is being made in spite of this dead weight of taxation, and gives elaborate statistics from which we may gather the exact way in which the development of trade and manufacture has been hindered by false political economy, conclusions which are all the more striking as they force themselves upon us in spite of the author's own somewhat heretical economic views. It describes the various populations

that go to make up the far from homogeneous whole—the industrious and trustworthy Piedmontese, the gay Venetian, the lazy Neapolitan, the revengeful Sicilian and the rude mountaineer of Sardinia. It shows how differences of character are in course of modification by internal intercourse and common national feeling, after much hindrance to progress from sectional aims and jealousies. It traces the history of Italian art through the period of its brilliancy to its modern decadence. It gives an outline of the political institutions of the country, accompanied by a vivid picture of the domestic and city life of its inhabitants, their attractive manners, their passion for play, their superstitions and their crimes. Finally, it traverses the land, from the Alps to the African Sea, describing every town or district of importance, and attaching to each some distinctive mark, so that place after place which had been to the ordinary reader but a name on the map, has acquired for him a vivid meaning, and he will, I hope, feel as I do myself after careful perusal of the book, that no country that he has not actually visited is to him so real as Italy.

H. A. NESBITT.

*January, 1904.*

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## CHAPTER I

### Boundaries Extent and Contour

ITALY, the Peninsula of the Apennines, is the middle of the three great masses of land which stretch southward into the Mediterranean from the main trunk of Europe. On a less massive scale than the Iberian peninsula to the west, and less articulated than the Balkan peninsula to the east, it forms the transition between the two as regards the length of its coasts and the number of its islands. It is, moreover, the most perfect political unit of the three.

The name Italy has not yet been satisfactorily explained. The existence of an ancient tribe, the *Itali* or *Vituli*, from which the land might have been named, is not proved. On the other hand, it is probable that the name made its way from the south to the north of the peninsula, and that this progress was contemporaneous with the union of the various populations into a single whole. The first documentary use of the name was in the year 90 B.C., when it was used to designate by a national name the allies who took up arms against the Romans and Latins. It was then transferred to the whole country, and later still to the dominion formed by welding together separate smaller states. The other designation, "The Apennine Peninsula," is an appropriate one because the contour and topography are primarily determined by that mountain curve which branches off from the Alpine system and is called the Apennines, so that in this respect also Italy is more of a complete unit than the two neighbouring peninsulas.

The boundaries of the country are indicated by Nature. In the north the mighty range of the Alps divides it from the rest of Europe. Beginning at the Gulf of Genoa, its first trend is to the north, marked by the mountains called Col di Tenda, Monte Viso and Mont Blanc. It then turns to the east, the boundary being formed by the lofty ice-clad ridge of the Alps of the Pays de Vaud, with Monte Rosa, the Matterhorn and the Pizzo d'Andolla, as far as Mount St. Gothard. Further east the line runs over the Pitz Bernina, the Ortler Spitz, Mount Tofana, the ridge of the Carnic Alps as far as the commencement of the Julian Alps and the Karst. On the east, south and west, Italy is enclosed by the Mediterranean Sea, that is by the Adriatic, the Ionian Sea, the African Sea (*Mare Africano*), and that part of the Mediterranean which lies between France and Africa. The Adriatic and Ionian Seas are connected by the Channel of Otranto, while the Straits of Messina and the Maltese Channel join the African Sea to the

Western Mediterranean. The islands of what is called the Tuscan Archipelago (Gorgona, Capraia, Elba, Pianosa, Formica, Monte Cristo, and Giglio), which lie in the Mediterranean, the great islands of Corsica, Sardinia and Sicily, the Lipari Isles and the Ægates, with Pantelleria, Lampedusa, Linosa, and the Maltese group between Sicily and Africa, as well as the craggy islets of the Adriatic (Tremiti, Pelagosa), are considered to belong to Italy partly because of their proximity to the coast and partly because of the identity of population. The political and the natural boundaries do not altogether coincide. In the north some parts of the southern slope of the Alps belong to neighbouring states, viz. : the Canton of Tessin to Switzerland, and the valley of the Adige in Southern Tyrol to Austria. Corsica belongs to France, the Maltese Islands to England.

The extreme points of the country thus delimited are : in the west, Mount Tabor in the Cottian Alps ( $6^{\circ} 33' \text{ E.}$ ); in the east, Cape Otranto ( $18^{\circ} 31' \text{ E.}$ ). The Cima di Vanscuro, near the Sistine Pass in the Carnic Alps, marks the most northerly point ( $46^{\circ} 40' \text{ N.}$ ), while the most southerly is the south coast of Malta ( $35^{\circ} 46'$ ) or the Island of Lampedusa ( $35^{\circ} 29'$ ). Thus the district to be considered embraces an area of nearly twelve degrees of longitude and ten of latitude, a great part of which, however, is taken up by the sea. Southward the Italian mainland extends but little beyond the thirty-eighth degree of latitude.

Between the mainland and the islands of Corsica and Sardinia comes the broad Tyrrhenian Sea (*Mare tirreno*), while between Corsica and Northern Italy lies the Gulf of Genoa, sometimes called the Ligurian Sea (*Mare liguro*). Besides these there are in this space enclosed by parallels and meridians considerable portions of the north-western part of the Balkan Peninsula, and the most northern districts of Tunis, which we shall of course exclude from this work.

The entire land of Italy covers an area of 119,139 square miles, of which the mainland has 96,251 and the islands 22,888 square miles. The kingdom of Italy embraces only 110,678 square miles, as Southern Tyrol with roughly 4,000, the Canton of Tessin with 1,087, Corsica with 3,376, and Malta with 125 square miles must be subtracted from the number given above.

The mainland consists of a narrow tongue some four times as long as it is broad, stretching from the foot of the Alps towards the south east. Its southernmost point is at the little town of Mileto in lat.  $37^{\circ} 55'$ . Cape Spartivento generally counts as the south point of the terra firma. This last is divided from Sicily by the Straits of Messina (*Stretto di Messina*), a waterway leading from the Tyrrheuan to the Ionian Sea. Roughly speaking, the coast lines of the Adriatic and Tyrrhenian Seas run tolerably parallel as far as the fortieth parallel of

latitude. Then the latter bends to the west to form with the north coast of Sicily the southern boundary of the Tyrrhenian Sea. The Ionian Sea encroaches upon the southern end of the mainland, forming a deep nearly quadrangular bay, the Gulf of Tarentum (*Golfo di Taranto*). This separates the hitherto compact strip of land into two peninsulas. The eastern, the shorter of the two, bears the name of Terra d'Otranto, the western of nearly double the length and far more articulated is called Calabria, a name which in the time of the Byzantine domination was transferred in a curious manner from the other peninsula to that which was originally called Bruttium.

More closely considered, the Adriatic and Tyrrhenian coasts exhibit essential differences. The former, which begins at the edge of the alluvial land at the foot of the Alps, runs in two large but dissimilar curves towards ESE., and finally stretches out in the Terra d'Otranto into almost a straight line. The course of these curves is determined by the plateau of Ancona and the isolated chalk mass of Monte Gargano which, as we shall see, do not, from a geological point of view, belong to Italy proper. The promontory of Ancona is a narrow low-lying triangle set on a broad base, while the headland of Monte Gargano seems almost like a spur with a small base line tacked on at right angles to the coast. The Tyrrhenian side has a far more elaborate articulation. We have, indeed, corresponding with some exactness to the curve of Ancona, another curve whose coast line stretches south-west, which we may designate the Tuscan curve, and which after a little return to an eastward direction passes into the Calabrian-Sicilian bend mentioned above. But in addition to these there are numerous smaller gulfs and bays, some not running far into the land, some deeply cut, between which are left tongues of land, some broad, some narrow, imparting a charming diversity to the coast. The long stretches of sea in the north are replaced further south by deep semicircular bays which continue to Calabria and the north of Sicily. Taking them in order from north to south, the most important are as follows :—

The Gulf of Spezia is the only one which points inland NNW. It lies between the Apennines proper, and one of the spurs of the same range, the peninsula of Porto Venere. Then follows the shallow bay at the mouth of the Arno, called the Gulf of Leghorn. Opposite the Isle of Elba juts out the promontory of Piombino, dividing the Gulf of Baretto and the Gulf of Follonica, and Monte Argentario, somewhat further south, has a similar position with regard to two shallower bays, the Bay of Porto St. Stefano to the north and the Bay of Porto Empedocle to the south. Four gentle curves of the coastline which has Civita Vecchia, Porto d'Anzio, and Monte Circeo as points of inflexion, lead us to the Gulfs of Terracina and Gaeta, with which begin the more

sharply marked indentations of the contour. The gulfs of Naples, Salerno and Policastro may serve as types of these, different as they are in the details of their general outlines. The Gulf of Naples cuts most deeply into the land ; the northern boundary is formed by what are called the Phlegræan Fields with the associated islands of Ischia, Procida, and Vivara, and the southern by the long and narrow peninsula of Sorrento with the island of Capri lying before it. The neighbouring Gulf of Salerno is separated from the Gulf of Policastro by the broad quadrangular mountain mass of Cilento, jutting into the sea at Cape Palinuro.

After an almost straight stretch of Calabrian coast we finally reach the bay of Sta. Eufemia and the bay of Gioya separated by a knot of mountains, which are terminated by Capo Vaticano. In Calabria the same Cape formation passes to the Ionian Sea on the other side, where first the southern section of the Gulf of Tarentum near Rossano assumes a similar form, and secondly the Gulf of Squillace corresponds to the Gulf of Sta. Eufemia on the west coast. The bays of the north of Sicily, to be mentioned later, such as the Gulfs of Castellammare, Palermo, Cape Tindaro are immediately connected with these. The unsymmetrical form of the bays of Gaeta, Salerno and Policastro is worthy of notice ; while the northern portion of the coast is shorter and strongly curved, the southern is longer and nearly straight, running nearly parallel in all three, and thus presenting very similar forms. The connexion with the lands north of the Mediterranean takes place on each side of the Italian peninsula by means of a curve, convex to the north ; the western has received the name of Gulf of Genoa, from the city which lies at its apex, while that on the east is called the Gulf of Venice.

The Adriatic coast is uniform and wanting in articulation in comparison. This impression is still further increased by the considerable number of islands, often quite near to the coast, of the Tyrrhenian Sea, to which can be opposed in the Adriatic only the small scarcely habitable rocks of the Tremiti, north of Monte Gargano. To the west of the Italian mainland we have in the north what is called the Tuscan Archipelago, the largest island of which, Elba, is only a few miles distant from the coast, the other islands describing an arc facing the Tuscan shore. To the south follow the islands, already named, of the Bay of Naples, Capri, Ischia and Procida, which appear even to the unlearned to be, what they are in reality, detached portions of the mainland. To the west of Ischia, the little group of the Ponza Isles, visible in clear weather from the mainland, emerges from the sea in a long scattered line. Among these, besides several unimportant crags and shallows we may mention Palmarola, Zannone, Isola di Ponza,

Ventotene and San Stefano. The third and last group of islands in the Tyrrhenian sea, the Æolian or Lipari Isles, exhibit a singular arrangement. They lie on three lines, which meet in a point at almost equal angles, at no great distance from the coasts of Sicily and Calabria. The shortest branch of this three-rayed star points to the south, and is nearly perpendicular to the north coast of Sicily ; it carries the islands of Lipari and Volcano. The second branch runs north-east, and is formed by the islands Panaria Basiluzzo and Stromboli, including Strombolicchio. The third or western ray is composed of the islands of Salina, Filicuri and Alicuri, besides the island of Ustica which is further off, but in the same direction.

The island of Sicily is closely connected with the southern extremity of the Italian mainland, being separated from it only by the two to two and a-half miles of the Straits of Messina. It has a distinctly triangular shape and consequently received from the ancient Greeks the name of Trinacria, while the present name derived from an indigenous people, the Siculi, was applied to it by the Romans. The angular points are Capo Rasocolmo in the north-east, near Messina ( $38^{\circ} 26' N.$  lat.  $15^{\circ} 31' E.$  long.), Capo Passaro or the Isola delle Correnti ( $36^{\circ} 38' N.$  and  $15^{\circ} 10' E.$ ) in the south east, in the Ionian Sea, and Capo Boeo or Lilybeo ( $37^{\circ} 48' N.$   $12^{\circ} 25' E.$ ) in the west. As the northern and southern coasts are nearly of equal length (199 and 177 miles), the island appears as an isosceles triangle on a base smaller than the sides (133 miles) the apex of which is truncated but completed by a row of islands, the Ægæan Islands (*Isole Egadi*). The surface of Sicily measures 9,830 square miles. The northern coast line is characterized by two deep bays at its extremity (Gulf of Milazzo and Gulf of Castellammare), and a flatter section between them less indented. This latter again consists of three unequal parts, the two which are more sharply marked being called the Gulf of Palermo and the Gulf of Termini ; these are separated by Cape Zafferano. The south coast is regular in its course, and is composed of many shallow bays, of which we name only the Bay of Terranova, furthest south-east. Finally, the land on the eastern side falls back from Messina to Catania about the middle, and then juts forward again at Capo Sta. Croce, and the Syracusan peninsula, embracing the harbours of Syracuse, so renowned in ancient times, as well as the existing naval port of Augusta.

Sardinia (*Sardegna*) and Corsica are two closely-connected masses of land, separated only by the narrow straits of Bonifacio (Bocche di Bonifacio), but not so close together as Sicily and the Italian mainland. The names are derived from the tribes settled there in ancient times. The longitudinal axis of the islands runs north and south from Cape Corso at the north point of Corsica in  $43^{\circ} N.$  lat. to Capo Spartivento,

the southern extremity of Sardinia,  $38^{\circ} 53'$ , or Capo Teulada in  $38^{\circ} 52'$ . Sardinia, the larger of the two, has an area of 9,189 square miles, and is the second largest island of the Mediterranean. In form it is a rhomboid with the two longer sides running north and south, and the two shorter north-east and south-west. The promontory named Nurra in the north-west juts out to the north and to the west, and gives off several islands. The sea encroaches on the land on each of the four sides with a deep bay, the Gulf of Asinara on the north, the Gulf of Orosei on the east, the Gulf of Cagliari in the south and the Gulf of Oristano in the west. The coast formation varies in an extraordinary manner. Side by side with the nearly straight course of the southern coast we have fiords, skerries, and precipices on the north-east and a succession of deep bays on the western side.

The contour of Corsica is oval if we neglect the peninsula of Bastia, which juts out far to the north, and is tacked on to the north-east of the island like the handle of a hatchet. The surface of the island is 3,377 square miles. The two sides are completely different in shape, for while the Tyrrhenian side takes a course devoid of indentations, sometimes straight, sometimes slightly curved, the western side is characterized by numerous narrow promontories, between which lie bays of various forms and often of great depth. The larger among these taking them from north to south, are : Gulf of Fiorenzo, Gulf of Calvi, Gulf of Galeria, Gulf of Porto, Gulf of Sagona, Gulf of Ajaccio, Gulf of Valinco.

According to official statistics, Italy has a land boundary separating it from the neighbouring continental states of 1,180 miles, and a stretch of coast of 2,272 miles in the peninsula and nearly the same amount, 1,944 miles, in the islands, Sicily and Sardinia having each a third of this.

## CHAPTER II

### The Surrounding Seas

THE basin of the Mediterranean Sea as it exists at present, is not uniform in the history of its development. The eastern and western halves are very different in age, and its several parts have been united together little by little so as to form a continuous extent of sea, to which the Ægean must be considered the most recent addition. This explains on the one hand its irregular shape, its being composed of many sharply delimited sections, such as the Tyrrhenian and Adriatic Seas, and on the other hand the differences between these as well as the more or less distinctly basin-like shape of the sea bottom. The western Mediterranean, lying between Algeria, the Balearic Isles, Sardinia and Corsica descends from the African coast in a regular and rapid fall to the depth of 1,000 fathoms between Sardinia and the Balearic Isles, while between Tunis and the latitude of Southern Corsica the depth exceeds 1,500 fathoms. The deepest places, 1,720, 1660, 1646 fathoms, are arranged in a curve around the south-western corner of Sardinia. Answering to this basin there is a small triangular depression in the Tyrrhenian sea, on the other side of Sardinia, called the Tyrrhenian Deep. Here too the 1,500 fathom line is exceeded, the deepest sounding hitherto taken not far from the intersections of the 12th meridian with the 40th parallel reaching 2,056 fathoms. The 1,500 fathom curve which hugs the land in the Gulf of Genoa leaps over at the longitude of the north of Corsica from the mainland to the island connecting the northern point of the latter to the former by a submarine isthmus. Within this shallow belt and connected by it to the peninsula lies the Tuscan Archipelago, and south of these begins the transition to greater depths. A second ridge, similar but without islands runs into the Tyrrhenian Sea from the north-east corner of Sardinia at the latitude of Rome. The occurrence of an isolated cone-shaped shallow of 250 fathoms hard by the largest of the observed depressions is a striking phenomenon. This submarine cone is situated to the south of the Ponza Isles west of the Neapolitan Islands and may be of volcanic origin. South of the Tyrrhenian Sea the Lipari Isles, especially Ustica, rise in a similar way above the surface of the sea from a depth of over 500 fathoms.

The Adriatic Sea is resolved into two parts: that to the north, the shallower, is not much over 100 fathoms, while the southern is 500 fathoms in depth. They are separated by a broad flat ridge,

stretching from Monte Gargano to the island of Lesina on the Dalmatian coast, and forming at its highest points the Tremiti Isles and Pelagosa. The Gulf of Venice is shallow, the 50 fathom line occurring first in the latitude of Ancona, and the depth of 100 fathoms being only reached in a narrow trough running from SE. to NW., hard by the isolated Dalmatic Islands of Pomo and San Andrea. In the Southern Adriatic, on the other hand, the basin shape is very sharply expressed, for between Monte Gargano, Terra d'Otranto and Albania lies an elliptical cavity circumscribed by the 500 fathom line, which gives soundings of 795 fathoms at its southern edge. The Channel of Otranto, again, the mouth of the Adriatic, is shallower, being not much over 250 fathoms in depth.

The Ionian Sea contains the greatest depths observed in the Mediterranean. Here, too, the caldron shape is unmistakable, the lowest point lying near the intersection of the 36th parallel and the 18th meridian at a depth of 2,170 fathoms below the surface. The jutting out of the Apennines and the Balkan peninsula makes the upper edges irregular, as is evidenced even by the 1,500 fathom line at the north of it, but still more by the 500 fathom line. This stretches out in a digitate fashion near the island of Corfu into the Channel of Otranto, and proceeds in similar fashion into the Bay of Tarentum. It then follows the eastern side of Calabria and Sicily with tolerable accuracy, and at no great distance, making a slight detour into the Straits of Messina. Between the 1,000 and 1,500 fathom lines, some thirty-seven miles east of Cape Passaro and Syracuse, two conical elevations have been discovered, which rise to within fifty fathoms of the surface of the sea, but appear to be completely isolated. The Mare Africano between Sicily and Africa has a most irregular shape. It has neither the great depths hitherto alluded to, nor the basin-like shape. Two depressions, 500 fathoms deep, form a narrow trench between Malta and Pantelleria, adjacent to which, both on the African and the Sicilian sides, there are submarine plateaux. Thus we may trace a submarine bridge between Europe and Africa, which, as we shall see later on, lay once above the sea-level, and had the greatest influence on the fauna of Italy. These land-bridges are formed by a plateau, only 100 fathoms below the sea, which is adjacent to the south-east coast of Sicily, and reaches to Malta. Round these islands this plateau attains a greater breadth, especially to the east, and juts out above the sea to form the Maltese group of islands. In the deeper sea south of Malta it is continued in the Medina Bank, which is just touched by the 35th parallel. There is a second and similar ridge named the Adventure Bank, after the English exploring ship of that name, reaching from the south-west of Sicily nearly to the island of Pantelleria.

Its depth is under 100 fathoms lessening to an average of 50 fathoms in the middle, the highest point being at a depth of only 10 fathoms. The southern edge of the Adventure Bank is only 23 miles from the corresponding depth curve which sweeps round Cape Bon in Tunis, and no portion of the intervening channel exceeds 250 fathoms in depth. An almost isolated fragment at the east of the Adventure Bank has received the name of Terrible Bank. This rises to within 16 fathoms, and another part, the Nerita Bank, rises to 17 fathoms below the sea. On this lies the Secca del Vulcano, just where, in 1831, a small temporary volcanic island rose (Ferdinandea, Graham's Island, Nerita, Julia), the summit of which lies so near the surface as to be dangerous to a man-of-war of deep draught. As a similar submarine plateau starts from the Tunisian shore, embraces the whole of the Lesser Syrtis, and reaches its northern limit near the Pelagic islands of Lampedusa, Linosa, and Lampione, the deeper part of this African or Sicilian sea is limited to the tract between the islands of Pantelleria and Malta. Here the 250 fathom line shows that the plateau of Malta is continued at a greater depth towards the WNW. and up to the Terrible Bank, but that a narrow deep trench remains between it and the coast of Sicily. On this continuation of the Maltese ridge lies the Madrepora Bank, with its summit 46 fathoms under the sea. The two places where the soundings exceed 500 fathoms are narrow and of small extent. That on the west extends to Pantelleria, surrounding it north and south, so that it appears to rise like a cone from the bottom of the sea. The greatest depth occurs north of Linosa, and amounts to 890 fathoms. While the passage from the African to the Ionian Sea is wide, and only interrupted by the little Medina Bank, that leading to the western Mediterranean is barred by yet a fourth bank, which forms the continuation of Cape Blanco near Biserta, in Tunis. It bears the name of Sequerque Bank (also written Scherki, i.e. East Bank); it is only  $3\frac{1}{2}$  fathoms deep in its highest parts, and lies with its northern point in the latitude of the Ægean islands. The intervening sea, however, is over 250 fathoms deep.

The Mediterranean Sea enclosed by large masses of land of high temperature, is subject to powerful evaporation, and is thus characterized by a high degree of salinity. It is more salt than the Atlantic Ocean in spite of important streams which flow into it—the Nile, the Rhone, the Po—and the mass of brackish water from the Black Sea. The mean density of the water may be taken at 1.028, but it must be mentioned that the eastern portions show a salinity which increases with the longitude. The specific gravity just given implies a solution of 3.5 per cent. of salt. This heavy water flows deep down over the

sunken ridge of the Straits of Gibraltar out into the ocean, and is compensated by a strong surface current inwards, whose less saline waters reach as far as the Straits of Sicily and Sardinia. In the Adriatic the conditions are somewhat anomalous, as the Alpine streams in the North, especially the Po, reduce the specific gravity and the salinity by their inflow of fresh water; and, indeed, the water on the Italian coast is lighter than that on the Dalmatian. Observation shows that the specific gravity in summer increases from NW. to SE. from 1·0252 to 1·0294 in the Ionian Sea, and the salinity from 3·3 to 3·85 per cent. We get smaller numbers wherever there are large springs of fresh water rising at the bottom of the sea. This happens less in the neighbourhood of the Dalmatian coast than on the Italian side. The Ionian Sea, with its unimportant tributaries and its specially strong evaporation (due to the proximity of Africa), has the greatest density of the seas around Italy. Near Syracuse densities of from 1·0288 to 1·0291 have been observed, and near Zante the figure has risen even to 1·0295.

To this high salinity of the Mediterranean Sea is partly to be ascribed its peculiar deep blue colour, which affords to Northerners so pleasing a contrast to the tints of the Baltic or the German Ocean, and which adds essentially to the beauty and charm of the landscapes of the Italian sea coast. To this must certainly be added the greater clearness of the sky and its deeper and purer hue, the reflexion of which in the water increases the colour effect. The "Blue Grotto" of Capri is well known. In this the daylight is admitted through an opening under water, is sifted in passing through the latter, and evokes the most glorious play of colours on immersed bodies and in the cavern itself. The sea assumes the most splendid bright blue tints where it rests upon white chalk beds at no great depth, and is illuminated by oblique sun rays. There may then be remarked near the shore bright green or emerald colours, often caused by beds of seaweed at the bottom. Sometimes, however, the green is only due to the small depth, which is not sufficient wholly to absorb the green rays as well as the red and yellow. These vivid colours, changing every few miles, form a chief ornament of the coasts, especially in Lower Italy and Sicily.

This property of the sea is still further increased by the extraordinary clearness of the water. This is also a consequence of the greater salinity of the sea and the consequent increased dispersion of light. It is easy to be deceived as to the depth of the water by the distinctness with which shapes and objects at the bottom stand out, for in clear still water it is often possible from the deck of a vessel to see objects lying at the bottom at a depth of 10 to 15 fathoms.

The currents of the Mediterranean are also influenced by the salinity. We have just seen this in the case of the undercurrent of the Straits of Gibraltar, with its corresponding surface current. A similar thing takes place in the Straits of Sicily, but the movement of the sea in the region under consideration is chiefly caused by the prevailing winds. A current exists in the south of the



THE CURRENTS IN THE STRAITS OF MESSINA.

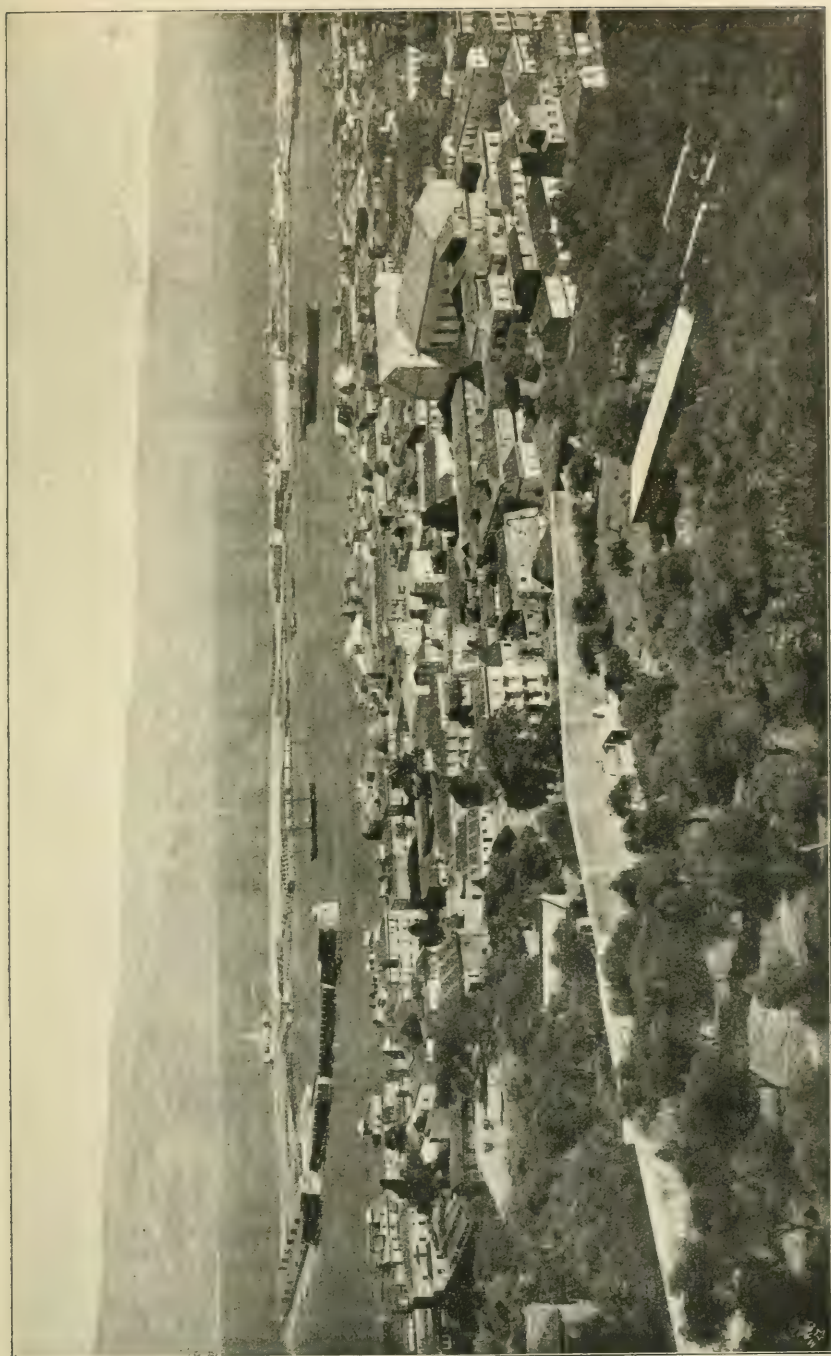
Tyrrhenian Sea, which runs from the western point of Sicily to the north of Calabria; here it splits into two and branches north and south along the coast of the mainland. The northern flows as far as the Gulf of Genoa, the southern passes partly through the Straits of Messina into the Ionian Sea. In the Adriatic we have a current which hugs the coast southward from the mouth of the Po in the Gulf of Venice, and is the cause of the diminished density of the sea in this

<sup>1</sup> Flowing tide; Ebbing tide; Eddies.

district mentioned above. The same direction prevails on the eastern coast of Calabria and Sicily. The Straits of Messina, into which branches of these Calabrian surface currents force their way, exhibit, as a consequence of the friction caused by them, a series of unimportant whirlpools, which may have been dangerous to the small ships or inexperienced mariners of ancient times, and which played an important part in the Greek mythology under the names of Scylla and Charybdis, but present no obstacle to the steamships of the present day. The rapidity of the current in the narrows under an east wind amounts to 8 feet per second, or over 5 miles an hour.

Tidal action in the Mediterranean is feeble. The Straits of Gibraltar are too narrow for the tidal waves of the Atlantic to make their way far in, and within the straits the basis of the sea is so begirt with land and so set with islands, that it is not of sufficient extent to develop independent tidal waves of any great size. It was long a matter for doubt whether any such really existed. According to the evidence of accurate self-registering apparatus in several Italian ports and islands the existence of tides does make itself felt, as might have been anticipated, but the difference between ebb and flow is far less than the variation in the height of the sea caused by the wind, so that the tides have no importance in Italy, either in reference to travelling by sea or to the shape of the coast. In the harbour of Naples the flow amounts to a foot or 16 inches; thence it runs along the coast as far as Genoa in some three hours. In the narrower Adriatic Sea its motion is so retarded that it does not reach Venice until 7 hours after its entrance into the channel of Otranto, this being partly due to the shallowness of its northern section. The height of the tide has been found by measurement to be from 20 to 25 inches at Venice, and 12 inches in the harbour of Messina.

It has been ascertained by levelling across the land that the Adriatic stands somewhat higher than the Tyrrhenian Sea, apparently owing to the attraction exercised by the surrounding masses of land. The exact figure is not yet certain, as 30 inches and 6 inches have both been given. It is only at the surface that the temperature of the Italian seas is subject to fluctuations. From a depth of 300 fathoms downwards a uniform temperature of 54·8°F. to 55·4°F. prevails, which corresponds to the mean winter temperature at the surface. The submarine ridge at Gibraltar permits no outflow to the deeper parts of the Mediterranean water, and at the same time prevents the cold waters of the ocean from pouring into the deeper portions of the basin. The temperature sinks in the highest layers of water, and then remains constant to the depth of 2,000 fathoms, a phenomenon only explained by the fact that the basin is completely shut off. In the



VIEW OF MESSINA.



Gulfs of Genoa and Venice, as well as in the whole of the shallow northern Adriatic, there are of course considerable differences of temperature under the influence of the rivers and the seasons, but in the Adriatic the temperatures become gradually equalized towards the south-east. Ice is never formed on the Italian coasts, for even in winter the average temperature of the sea is from  $56^{\circ}$  to  $57^{\circ}\text{F.}$ , and it rises in summer to  $68^{\circ}$  and  $70^{\circ}\text{F.}$

## CHAPTER III

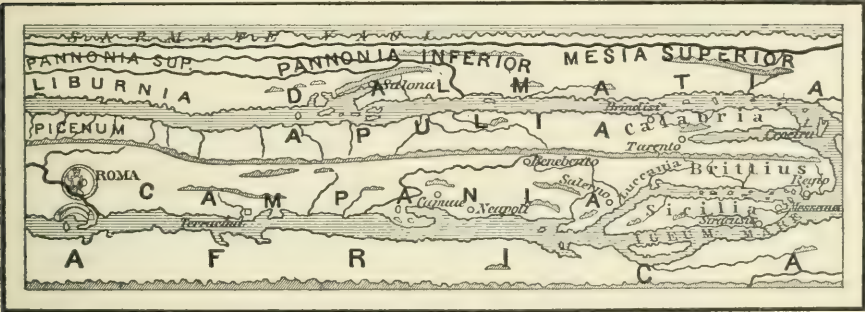
### History of Discovery

As Italy is a land of ancient European culture, we can hardly speak of its *discovery* in the proper sense of the word, yet it may be permissible to interweave here a short survey of geographical research in Italy.

Neither ancient times nor the Middle Ages had any idea of a science of geography in our sense. Geography either treated of cosmography, of maps of routes and sea voyages and the determination of topographical details necessarily connected with these, or it consisted of notes on natural history, mingled with legends and traditions, anecdotes and superstitions. Our chief source of information about ancient times is the *Natural History* of the elder Pliny, in which there are scattered notes concerning the physical geography of the Italy of his time, many of which have been shown to be accurate. The third book of the *Historia Naturalis* contains a systematic enumeration of the cities, localities and populations of Italy and its islands. Solinus, a compiler of the fourth century, made many extracts from Pliny, and thus handed down to us some information which would otherwise have been lost. Even before Pliny, Strabo, in the time of the Emperor Augustus, wrote a "Geographica" which forms another chief source of our knowledge of ancient countries. The Fifth and Sixth Books treat of Italy, giving a short description of the chief places from the foot of the Alps to Sicily, and mentioning their history with the principal circumstances of interest in the topography and the natural history of their surroundings. Then there is in existence a book by Pomponius Mela, called *Chorographia*, containing various notes, many of them false. Ptolemy of Alexandria, the best known geographer of later antiquity, gives the longitude and latitude of numerous cities, coast towns and river mouths; 340 points are determined in Italy, 52 in Corsica, 64 in Sardinia, and 109 in Sicily. Among these are Genoa, Rome, Naples, Reggio, Pisa—these served later as points of control. In Kiepert's *New Atlas of Greece and its Colonies* a map of Southern Italy and Sicily was given which had been drawn from these data; this, however, gives quite an incorrect picture of Sicily, so that the determinations must have been inaccurate. There is extant, moreover, a road map of Italy of the fifth century in the well-known *Tabula Peutingeriana*, but this for the sake of economy of space strangely distorts the position and contour of the country. The same



SOUTHERN ITALY AND SICILY FROM PTOLEMY'S DATA.



SOUTHERN ITALY AND SICILY (AFTER THE TABULA PEUTINGERIANA.)

may be said of the *Itinerarium Provinciarum Antonini Augusti*, which gives details of the military roads and stations in the Empire, thus including Italy, and is said to date from the time of Caracalla. From the fifth to the eighth centuries geographical notices in the proper sense are only to be found in the writings of the Fathers, and these are frequently only mutilated extracts from Pliny, Ptolemy, and others. The same holds of a work by an unknown author, *De Mensura orbis terræ*, which was written at the Court of Charlemagne in the year 800 A.D.

The centuries immediately following did little to further geographical knowledge, the main interest of the time lying in the region of religion, but the people of Amalfi, the Genoese, and the Venetians possessed navigation charts on which islands, promontories and straits important to mariners were introduced and named, while the land itself was, as it were, merged in the coasts and the sea. The Map of Marino Sanuto, drawn in 1320, of which several copies of later date are found in different libraries, suffers from the like disadvantage.

The celebrated Albertus Magnus (died 1280) may be considered as a forerunner of the science of physical geography. In his journeys in Italy he became acquainted with volcanic action, which he ascribed to subterraneous conflagration of sulphurous naphtha. Steam is thus generated, which, being held back by the water of the sea, explodes and through this it happens that volcanoes are found on the sea coast. He adds that the rock remaining after the combustion of the naphtha is spongy—alluding to the pumice stone of Southern Italy. The Catalonian school of cosmographers followed in the footsteps of Sanuto, and from their hands came the Map of the World, constructed for Charles the Wise of France (1375), which is still in existence. In the description attached to this map the following is said of Italy: "Italy was first called Græcia, then Saturnia, then Latium, then Ausonia, and finally received the name of Italy. It begins at the foot of the mountains which are called the Alps, the slope of which adjoins Lombardy and the Tyrrhenian Sea. In this country is the city of Rome, named after King Romulus, who built it in ancient times. Cities were then built in the shape of large or wild animals, and thus Rome has the form of a lion, the ruler over a hundred ravenous beasts. This Rome is the City of Cities. All its buildings are of brick, hence it is also called Laternis, which means 'made of brick.' . . . Then comes Sicily, formerly Sicania. It was also called Trinacria, from its three mountains. On this island stands Etna, where sulphur is always burning." Not much is gained from such geography, and the like holds of the metal map of the year 1452, preserved in the Museum of Velletri. The construction of such maps on wood or metal dates from

the time of Charlemagne, and these materials were resorted to principally to give greater durability to the work.

In 1511, Bernhard Sylvanus revised the determination of places given by Ptolemy, thus fixing anew the longitudes and latitudes of a few Italian towns. In the sixteenth century Leandro Alberti of Bologna produced a *Description of the Whole of Italy* (*Descrizione di tutta l'Italia*) in the vernacular tongue (not Latin), but he was not able to free himself from traditions and fables.

The impetus given to geography by the great discoveries of the Spaniards and Portuguese, which led to the deposition of Ptolemy from the throne of authority he had held till then, finds expression in the cartographical work of Gerhard Mercator and Abraham Oertel (Ortelius). The *Atlas of Italy* by these authors appeared in 1589. The list of authorities used in Oertel's enumeration shows us that in different parts of the country there were already inquirers who devoted themselves in a thorough manner to the topography and geography of their native land. This received a new impulse from the lively interest taken in the revived study of the classics, the pleasure in searching the ancient authors still extant or newly disinterred, a spiritual revival whose influence was still felt in a similar way in the seventeenth and even the eighteenth centuries. Even in the later local literature of Italy traces of this kind of inquiry may be remarked, leading to extensive compilations and long discussions on subordinate problems.

In the seventeenth and eighteenth centuries Italy, with her treasures of antiquity, was the subject of numerous books of travel, published by Germans, Frenchmen, Swedes, Danes, and Englishmen. To these were added monographs of individual portions, e.g. *A Hydrographic and Geographic Description of Corsica*, by Boswell, the *Descrizione del regno di Napoli*, by C. O. Beltrano, the *Novum Theatrum Pedemontii et Sabaudiae* 1726, and many others. The volcanoes evoked a very extensive literature, especially Vesuvius, the great eruption in 1631 taking up no less than 150 essays, speeches and poems. Good maps of Italy were produced for the first time in the nineteenth century, when cartography was for the first time brought to perfection. In the state of political disintegration in which Italy stood a considerable part of the necessary surveys were undertaken by foreigners. In Upper and Central Italy the Austrians published the materials for detailed maps, and the map sheets for Lombardy, Venice and Central Italy on the scale of 1 : 86400. French officers of the army of occupation surveyed the south-eastern portion of the States of the Church, and brought out a map, on the scale of 1 : 80000 (Paris, 1856). Work of this kind made such progress in the Kingdom of Sardinia that a map

appeared in six sheets in 1841 on the scale of 1 : 250000, and a general map of 1 : 500000 in 1846. Lower Italy did not enjoy a connected survey till after 1861. The survey of the coast and of the environs of Naples indeed date back to the beginning of the century, and were begun by French officers of the Napoleonic government, while the coasts of Sicily were mapped out by the English (Smyth). The construction of the *Carta dei contorni di Napoli e porzione delle provincie limitrofe* 1 : 25000, in fifteen sheets lasted, however, from 1818 to 1870. After the unification of Italy was completed, the preparation of a uniform survey with corresponding maps was commenced. This is called the *Carta del Regno d'Italia* 1 : 100000 ; it consists of 277 sheets, and is being constructed by the Bureau of Military Geography of the Italian General Staff. Portions of the country of greater importance or more full of detail appear in the scale of 1 : 50000 or 1 : 25000 ( $1\frac{1}{4}$  inches, or  $2\frac{1}{2}$  inches to a mile), for instance the environs of Rome, Florence and Turin, Gran Sasso d'Italia, Monte Viso (1 : 50000). Maps of Vesuvius and of the Island of Pantelleria are even on the scale of 1 : 10000 ( $6\frac{1}{3}$  inches to a mile). This great work has been rapidly pushed on during the last twenty-five years, but has not yet been brought to a conclusion. General maps were published in 1885 on the scale of 1 : 1000000 and 1 : 800000, each of six sheets. The special maps of Central and Southern Italy in four sheets 1 : 250000, by Kiepert, are very serviceable, and in these antiquity has received the requisite consideration. Stieler's Hand Atlas is a well-executed general map in four sheets, 1 : 500000. The *Ufficio idrografico della regia Marina* provides charts and plans of the coasts and harbours.

Italy, besides the topographical survey, is producing at the same time a geological map published by the *Ufficio geologico del Regno*. This office, it is true, does not possess the means necessary to carry the special maps through the press, so that only Sicily in twenty-eight sheets, 1 : 100000, the Roman Campagna, and some parts of Calabria have appeared. A general geological map in two sheets 1 : 1000000 was issued in two editions in 1889.

Besides these the Institute of Military Geography sees to the construction of railway and road maps, so that at the present time there exists a plentiful supply of good maps, and it must be acknowledged that the young state of Italy has shrunk from no sacrifice in the endeavour to place herself on a par in this respect with the other Great Powers of Europe. At the same time it cannot be denied that to open up by means of highways, railways, and country roads, this country previously half ruined by being broken up into small states, practicable maps with topographical details are absolutely required, and that it was necessary on this account to press on the work in every possible way.

## CHAPTER IV

# Relief of the Country

### I. THE ALPS

THE relief of the Italian mainland is determined by the Alps and the Apennines. Between the two lies the broad plain watered by the Po, designated Northern Italy, or Lombardy. The descent of the Alps towards the south is far more rapid than that towards the north, where in front of the Alps we have first the high plateau of Switzerland and then that of Bavaria. The slopes are most precipitous in the west, a bee line from the summit to the foot of Monte Viso in the Cottian Alps measuring only 8 miles, while in the Graian Alps a similar line amounts to  $12\frac{1}{2}$  miles. Further east the ridge slopes to the north and the figures become considerable, all the more as the range encroaches on the plain with small spurs and subsidiary chains. This is especially the case between the tenth and eleventh meridians, a district characterized in its position and southernmost extension by Lake Garda and the Valley of the Adige. By this offshoot the line marking the foot of the Alps becomes a double curve with a Lombard and a Venetian section, the latter running almost parallel to the coast of the Adriatic.

In the Alpine district we have in the Maritime and Cottian Alps short valleys opening to the east and running at right angles to the zigzag line of the summit, the waters of which (Stura, Maira, Chisone, and Dora Riparia) unite in the Upper Po, which likewise rises in this district. These gullies are separated from one another by sharp narrow ridges nearly parallel to one another, and this arrangement is preserved as far as the Graian Alps. The highest points of the frontier ridge are the Punta Argentera (11,145 feet), Monte Timibras (9,948 feet), and Monte Viso (12,608 feet), whose snow-crowned summit remains visible far into the plains of the Po. On reaching the Graian Alps the chain-like arrangement of its several parts becomes more distinctly evident at the turning point of the range. Side by side with transverse valleys there occur from this place to the district of the Adige long broad longitudinal valleys running east and west in which the rivers burst through their marginal chains almost at right angles on their way to the plain. The first rudimentary form of this configuration presents itself in the upper course of the Dora Riparia at Mont Cenis where for a short distance a SW.-NE. direction makes its appearance, for this is the ruling direction of the ridge line of the Graian Alps, the mountains of Haute Maurienne and Savoy, and on the Italian side,

from Mont Iseran (7,003 feet) as far as the mighty mass of Gran Paradiso (13,324 feet).

In the northern chain in front of Mont Blanc and in the Pennine Alps the range sweeps round and takes a trend due east and west, and the valley of the Dora Baltea lying north of Paradiso has the same trend till it passes with a sharp turn out of a longitudinal valley near Chatillon into a transverse valley. From this deep glen onwards all the other Alpine valleys of Italy open to the south, and with this circumstance are connected their vegetation, their fauna and their mode of settlement by man. The two rivers named Dora are those whose sources reach furthest into the mountains westward; they have consequently formed trade routes from of old. The Dora Riparia leads to the Col de Fréjus (6,883 feet) and the Mont Cenis Tunnel (4,245 feet) of the railway uniting France and Italy. The Dora Baltea leads us over the Little St. Bernard (4,076 feet) in the valley of the Isère, and thence to Grenoble and Lyons, as well as over the Pass of the Great St. Bernard (7,113 feet) which opens northward to Martigny in the Rhone valley and to the Valais. The Pennine Alps with the Matterhorn (14,705 feet) and Monte Rosa (15,217 feet) form an almost insurmountable wall crowned with snow and ice and yielding the most magnificent mountain and glacier landscapes on the Italian side, although the principal masses of ice occur on the northern or Swiss slope.

Tessin coming next to the east, with the three valleys of the Tosa, the Ticino and the Moësa has an irregular relief as transverse valleys prevail and their converging waters unite in the deep channel of the Lago Maggiore. Nevertheless the essentially east and west direction of the southern portion of the range finds expression in the middle of the course of the Tosa, at the north extremity of Lago Maggiore and in one horn of the Lago Lugano. To the north the boundary is less sharp, the passes are numerous and good, as that from the Tosa over the Simplon (Sempione, 6,594 feet) to the Rhone, that from the Ticino over the St. Gothard (6,936 feet) to the Reuss, that over the Luckmanier to the Vorder Rhine as well as that over the San Bernardino to the Hinter-Rhine. The heights in this section fall below those hitherto mentioned, seldom surpassing 10,000 feet. This height is exceeded in the case of Monte Leoni (11,697 feet) of the Basodine at the back of the Tosa valley (10,746 feet), of the Adula group between Ticino and Moësa where the Rheinwaldhorn rises to 11,147 feet and San Bernardino to 10,746 feet.

The following section is formed by the Valtelline and Bergamo Alps, two parallel ridges running east and west and enclosing the upper valley of the Adda. The Bernina group with the Pizzo Bernina (13,294

feet), girt with mighty glaciers, occupies the north side of the deep and broad Valtelline. The Splügen Pass (6,946 feet) between this and the mountain mass of Adula runs along the north to south valley of San Giacomo or Liro into the Rheinwald Valley, one of the most important mountain roads since the time of the Romans, especially frequented in the Middle Ages. The valley of the Liro, like the affluents of the Upper Adda, runs at right angles to the trend of the mountains and terminates in the three-cornered Lake Como. The road leading from the Engadine over the Maloggia or Maloja Pass has the same termination; it follows the Mera river, coinciding near Chiavenna with the road over the Splügen. The Bergamo Alps consist of several chains, which diminish in height towards the south. The highest is bounded by the Valtelline and from this proceed the Bergamo rivers, Brembo, Serio, and Oglio, in transverse glen-like valleys, through the remaining ridges into the plains of Lombardy, and as it is here that the mountains begin to descend into the great plain, they increase in length, so that the valley of the Oglio, or Valle Cammonica is nearly twice as long as that of the Val Brembana. The Upper Adda receives its most important tributaries from the south-west side of the Ortler group (12,994 feet) up to where the Oglio reaches its southern end (Pizzo Tre Signori, 11,020 feet). The Upper Valtelline is continued eastward to the Tyrol by the Sulzberg Valley, which is joined to the Edolo and the Oglio by the Tonale Pass (6,148 feet). South of this pass rises the block of Adamello (11,637 feet) with Presanella (11,686 feet), a mass strongly contrasted in configuration from the rest of the range. It is the wall of division between the Val Cammonica, the Val Trompia and Val Judicaria, the basin of the Garda, and the Adige. The rivers flowing there, the Mella, the Chiese, the Sarco, the Mincio, are nearly parallel with the foregoing mountains, with the Adige and with the rivers further east, and from their rapidity are of great importance to the industry of Upper Italy.

The whole of the lower portion of the Fore-Alps between the Ticino and the Adige is distinguished from the other sections of the mountain foot by the numerous and somewhat elongated lakes. The wild torrents from the heights discharge their detritus into these narrow but deep basins and then proceed with clear water and gentler fall into the plain of the Po. The series of lakes commences in the Strona valley with the Lago d'Orta, a narrow straight channel. Then follows the Lago Maggiore (also called Verbano) with two unequal horns, into the smaller of which flows the Tosa, and into the larger the Ticino. The Adda and the Liro empty themselves into the three-branched Lake of Como, and between this and Lago Maggiore lies the irregular many-

branched Lake Lugano, penetrating deep into the mountains. The Lago d'Iseo at the exit of the Oglio valley, and the Lago Idro whence issues the Chiese, are of simpler form, as is lastly the Lago di Garda, whose southern contour is club-shaped ; it is the source of the Mincio, the boundary river of Venetia.

The region drained by the Adige reaches far towards southern Tyrol, embraces the Vinschgau or the valley of the Eisack, the Ortler-group in the north and east and leads over the Brenner Pass (4,495 feet) to the Inn. From Bozen, the portion of it which concerns us, the course of the Adige goes SSW. through the Trentino, flanked on one side by the mass of the Brenta Alta (10,617 feet) and on the other by the Cima d' Asta and its offshoots (9,330 feet) and shortly after crossing into Italy and leaving the mountains makes a bend to the south-east. This bend, which comes from an alteration in the slope of the ground, or from the blocking up of the mouth of the river by its own sediment, takes place in a very characteristic manner in all Alpine rivers in Venetia, and it is not wanting in the Lombard rivers we have named, though in Lombardy it takes place some way from the mountains and more towards the middle of the plain. The Venetian plain is bounded by the Cadoric, Carnic and Julian Alps. In the two last we do not recognize the trend from east to west, while in the Cadoric Alps this first comes into obvious notice in the Sugana Valley (Cima Dodici, 7,648 feet) and the caldron-shaped valleys of the Avisio and Belluno. The short valleys are arranged in such a manner that a ridge is formed south-west to north-east which marks the limit between Italy and Austria as far as the Carnic Alps. The reason for this abnormal condition lies in the geological construction side by side with the appearance of isolated masses of limestone called by the name of South Tyrolese Dolomites. The Marmolada (10,527 feet) may serve as a type of these, and joined to this are on one side Monte Tofana and Monte Cristallo (10,696 feet) and on the other the Schlern and the Rosengarten. The waters of the Cadoric and of part of the Carnic Alps collect in the broad valley of the Piave, also called Belluno Valley, which has first a north to south direction and subsequently north-east to south-west, as far as the town of Belluno, where it widens out. The Sexten Pass (5,354 feet) leads through a lateral valley into the Gail Valley, that is over to the Upper Drave. The border chain which gives the Piave its turn to the west and which with Monte Cavallo bounds the caldron of Belluno on the south, runs further west and embraces the hills of Friuli up to the Julian Alps. This range is parallel to the Carnic Alps whose waters flow down the glen between them to the Tagliamento, at the point where this river receives its tributary the Fella. This flows in the opposite direction, breaking through the

subsidiary chain in a transverse valley running north to south, with a slight inclination to the west, making its way towards the Gulf of Trieste. The heights above Friuli culminate in the Monte Verzegnis (6,279 feet) and the ridge of the Carnic Alps has likewise a height of nearly 6,000 feet. A road and a railway have been constructed over this range from the valley of the Fella near Pontebba to the valley of the Upper Save reaching a height of 1850 feet. In the Triglave, one of the Julian Alps, rises the Isonzo, the boundary river between Italy and Austria. Its course is entirely analogous to that of the Tagliamento except that in consequence of the south-east trend of the southern Alpine chains its highest section appears to be pushed to the south-east instead of the east.

That part of the Alpine curve which comes under our notice ends with the commencement of the rough barren plateau of limestone, the Karst, as the ranges to the north-east of the Adriatic have already put on the arrangement and structure of the Dalmatian chains.

## II. THE APENNINES

*Gli Appennini*, the Apennines, or the Apennine, is the name given to a mountain range consisting of a number of parallel chains side by side and succeeding one another. Starting from the Maritime Alps on the Ligurian Sea it traverses the Italian mainland as far as Calabria in an irregular curve. The name is properly confined to the northern half, there being no collective popular designation in the south, the several chains or sections having each its own name. Different names according to the district are also given in the north to the Bolognese Apennine, the Roman Apennine, and the Ligurian Apennine, which explains the plural form of the collective term. The word itself occurs in Pliny and Cicero, but it is written with a single *p* and has a long *a*; its etymology is doubtful, but some learned men derive it from the Ligurian-Celtish *Pen* or *Ben*, which means mountain peak.

The Apennines form a typical mountain chain; like the Jura on the northern front of the Alps, they branch out similarly from the Alps and also describe a curve, on the inner side of which lie hilly districts and smaller plains. The separation takes place on the Ligurian Gulf, in the Maritime Alps, where the Col di Tenda (6,145 feet) marks the point of junction between the two mountain systems. The trend is first towards ENE. but it makes a sharp turn to NW. on the same meridian where the parallel direction of the Graian Alps changes to due east and west in the Pennine Alps. Thence to the south it retains the same direction through the whole Italian mainland. The situation of Genoa almost exactly coincides with the northernmost point of this

bend, so that the resulting bay is justly called the Gulf of Genoa. The remaining portions of the Northern Apennines are characterized by numerous short chains lying one behind the other and starting side by side on their southern trend. Through the imperfect separation of these in the higher places a mountain ridge results which instead of coinciding with the direction of the separate parts turns obliquely eastward. This runs with a direction more nearly due east than at first from Genoa to Ancona, where the chain comes close to the sea and remains near it as far as Monte Gargano. The chief chains and most considerable heights are developed on this last stretch. These are the mountains of the two Abruzzi provinces with the Gran Sasso d'Italia. In Southern Italy the summit of the ridge, the watershed between the Adriatic and Tyrrhenian Seas is again pushed over to the latter so that the higher ridges lie close to the Gulf of Policastro. Thus in Northern Italy we find first a gentler slope to the north and longer streams flowing to the plain of the Po with short steep valleys on the Gulf of Genoa. Then the conditions turn round; the short valleys leading to the Adriatic are opposed to the long furrows of the western side until a change takes place for the third time and again there are only wild mountain torrents leading to the Tyrrhenian Sea in the district of Naples, with a well developed, widely branching system of rivers falling into the Adriatic or the Ionian Sea.

On the inner side of the great curve of the Apennines which encloses the provinces of Tuscany, Umbria, the Roman Campagna and Campania we find a hilly country of very varied relief, giving place in its turn to typical mountain country, and it is anything but uniform in its origin.

It is not possible to form a clear conception of this region without once more bearing in mind that we have to do with parallel chains, of different lengths, and to some extent interrupted as they part from or mutually replace each other. Ascending from the eastern shore of the Gulf of Genoa, called the Riviera di Levante, up to the Apennines, we come to the Ligurian Apennine, a section of the range consisting of three ridges whose trend corresponds with the coast from Nervi to Spezia. Two longitudinal valleys divide the chains. The Lavagna flows through the shorter or northern valley near Chiava, the Vara through the other. Depressions occur near Rapallo and Spezia, so that the sea presses into the troughs between the ranges, giving rise to the peculiar bays which differ much from the other bays. The valley of the Scrivia which falls into the Po corresponds with the valley of the Lavagna, to which it forms a northern continuation. The higher range behind, which may be called from its mountains that of Monte Bue (5,915 feet), Monte Penna (8,973 feet) and Monte Gottero (5,380 feet),

is very narrow and knife-shaped in its southern part, while in the northern it gets broader and melts away into the next mountain to the eastward so that the two united with their offshoots reach far into the Lombard plain near Pavia. In this knot the Trebbia, the Tidone, the Staffora and the Carone, all tributaries of the Po, take their rise.

The next section is formed by four chains lying far asunder and separated by broad valleys. This section is called Apennino Etrusco in some maps, and in Italy it is also sometimes called Apennino Parmesano, Apennino Modenese, and Apennino Bolognese from neighbouring towns. It is separated from the Ligurian Apennine by the broad but short valley of Pontremoli with the Fiume Magra that affords one of the most important roads over the mountains to the plain of the Po. It has been very recently utilized for a railway. The valley of the Upper Tiber forms the boundary to the east. These four chains run far into Tuscany and Umbria, where they form longitudinal valleys with similar directions in their whole length. The first chain between Magra and Serchio is not continuous, being interrupted in three places. Its parts are the mountains between Passo la Cisa (3,415 feet), and Passo Cerreto (4,137 feet). Secondly the Apuanic Alps near Carrara, and thirdly the mountains of Lucca and the hilly country round Volterra. The Apuanic Alps and their continuations, Monte Pisani, lie close to the coast, which corresponds here to a valley which is prolonged into Tuscany by the line of the river Era. The trough parallel to it is formed by the Upper Serchio, the Pescia and the Elsa. The range is broken by two mountain gaps, by the upper of which the Serchio, and by the lower the Arno passes on its way to the sea. The second chain of the Etruscan Apennines begins close by Passo Cerreto with Monte Cusna (6,960 feet), and passing San Pellegrino (5,577 feet) and Pizzo dell' Abetone (4,554 feet) descends into the country between Pistoja and Lucca, accompanied on the left by the Serchio, on the right by the Umbrone. In this southern and lower portion it is called Monte Albano. Beyond the Arno, which has also to burst this barrier, come the Monti di Chianti lying between the Elsa and the middle part of the Arno, from which several subsidiary chains issue, thus giving the range a greater appearance of breadth. They are articulated by the glens traversed by the Pesa, the Greve, the Arbia, and the south part of the Umbrone. The third chain joins the second near its highest portions at the Pizzo dell' Abetone, commencing with Monte Cimone (7,110 feet) (visible a long way off) and passing Pontassieve and Arezzo reaches as far as Central Italy. It bears no collective name, the part between the above named towns is called Prato Magno and is surrounded on three sides by the Arno, but is touched on the north by the Sieve, which after passing through its longitudinal valley the prolongation

to the north-west of the trough of the Arno, falls here into the latter river. Finally the fourth chain, at the same time the broadest and mightiest, begins with the Pass of La Futa, a tolerably low one, being only 2,962 feet high and goes as far as the bend in the Upper Tiber near Perugia, or we may go so far as to say in the mountains of Spoleto. A great part of the Bolognese Apennine belongs to this chain, and practicable passes lead over it into the valley of the Upper Tiber as well as into those of the Sieve and the Umbrone. The lowest of these, and the one known from the earliest times as the most convenient route, is only 2,028 feet high. It has been utilized in making the line of railway from Bologna to Ferrara. In taking a general view of what has been said hitherto about the Apennines we see that the seven chains begin in a nearly straight line bearing ESE. and that of the successive members of the series the eastern is always somewhat longer than that preceding it on the west. Thus is brought about what may be designated the Tuscan Umbrian curve. Its northern foot is determined by a line from Pavia to Rimini, and resembles the slopes leading to the plain of the Po in its symmetry and uniformity. The valleys are all inclined to the direction of the range, and while not all of the same pattern have rivers in them of similar slope. It is only in a few of the smaller glens that the general configuration of the range finds expression, for example in the rivers Rossenna, Ozola, Dragone, three of the head springs of the Secchia. The rivers, many of them wild torrents, running into the Po, are called, beginning with the Trebbia, Nare, Arda, Stirone, Taro, Parma, Enza, Tresinaro, Secchia, Panaro, Reno, Sillaro, Santerno, Senio, Montone, Ronco and Savio. The earlier of these flow due north, the others, from Reno on the north-east, and fall no longer into the Po but into the shore lagoons or straight into the Adriatic Sea.

The Roman Apennine which reaches from the source of the Tiber to the Gran Sasso d'Italia has a far simpler construction than the Etruscan. It consists of an inner range, broad and high, and a narrower shorter external chain, with the elongated plateau of Camerina included between them. The former chain forms the eastern side of the bed of the Upper Tiber as far as Perugia and the mountains of Norcia and Foligno; the second begins with the height of Ancona, ascends from the smaller ranges of the Marches, and bears in its southern portion the name of the Monti Sibillini. The trend of this portion, which slopes to the Adriatic, as well as that of the parallel ridge near Foligno, passes into a more southerly direction. This direction is interrupted at the Gran Sasso, but returns again after a short stretch and persists to the gap of Pescara and the mountains round Solmona. The reason of this we shall learn at a later stage. The waters on the inner or western side flow through the Tiber into the Tyrrhenian Sea. On the western

side they break through the lower hills and flow into the Adriatic. As the summit of the range is only 35 miles from the Adriatic shore, at Gran Sasso indeed only half that distance, no elaborate river system has space to develop itself, and as far as Monte Gargano we find only a number of coast streams flowing to the north-east. Of these we may mention here the rivers Metauro, Esino, Potenza, Tronto, Tordino, Pescara, Sangro, Trigno, Biferno and Fortore.

At the southern end of the Roman range comes the highland of the Abruzzi with the basin of the Lago Fucino marking the centre. This plateau is a rectangle about 150 miles broad and 160 miles long, bounded on the east by the mountains of Solmona and the chain of the Gran Sasso (9,583 feet), and on the west by the valley of the Liri. Traversed from south-east to north-west by numerous mountain ridges it fits everywhere into the other Apennines in such a way that its eastern part forms a continuation of the heights of Perusina, and its western part with the mountains of Alatri forms a similar continuation of the Monti di Chianti, being joined to them in a geological sense by low chalk hills called the Sabine mountains, and by isolated cliffs and summits. The direction of the Roman Apennine, which turns more towards the south, has the characteristic trend of the Apennines displayed by this plateau. Thus is formed the Gran Sasso, an irregular knot of mountains of anomalous course and remarkable height, which turns with a sharp bend towards the east and has a steep descent to the south. In the middle of the plateau of the Abruzzi stands Monte Sirente, separated on its eastern side from Gran Sasso by the typical longitudinal valley of the Aterno, whose waters issuing eastward form the Pescara. On the other side lies the Fucine Lake, whose basin, with no effluent, has been rendered dry for the first time in the nineteenth century by the reopening of an old tunnel, leading to the Liri. Between the valley of the Liri and the Tyrrhenian Sea appears the isolated limestone mass of the Volscian mountains or Monti Lepini, cut off both north and south, whose direction is tolerably uniform with the other chains. The Sorrentine Mountains and the Cilento at Salerno are fragments of the continuation of this on either side, as are some cliffs or short ridges of the Roman Campagna to the north, which last display a powerful disruption and vertical displacements of the several rocks. At present the Monti Lepini belong to the Gulf of Gaeta, and the Garigliano, which empties itself there, flows round them on the east and the south.

With the Volscian mountains the Apennine has again returned to the western coast and approaches it closer and closer, so that the Gulfs of Naples, Salerno and Policastro appear to be buried in its seacoast chains. Moreover, a further transformation takes place, the eastern

ridges, hitherto the higher, becoming flatter while the lower ones on the west increase in elevation and the watershed therefore moves over towards the Tyrrhenian Sea. Besides this many limestone masses make their appearance in the mountain sections of Southern Italy ; these are broad, often with precipitous sides and of plateau-like surface, and give an essentially different aspect to the landscape. The beginning of this change is already perceptible in the Abruzzi and at the Gran Sasso, though the typical formation first occurs further south. Among the mighty chalk masses of this kind are Monte Matese (6,726 feet) near Benevento, Monte Alburno (5,718 feet) near Salerno, Monte Vulturino (6,004 feet) near Potenza, and part of the Cilento between the Gulfs of Salerno and Policastro.

From Benevento the whole of the eastern chains continue in densely packed parallel rows through the Basilicata as far as the Gulf of Tarentum, constantly diminishing in height towards the exterior. The rivers Basentiello, Bradano, Basento, Agri and Cavone run down to the sea in their elongated longitudinal valleys. The more rugged Tyrrhenian chains are to a great degree cut off by the bays named and by the Campanian plains which intrude right into the chain. The others exhibit between themselves longitudinal valleys like lake basins, often lying at a considerable elevation, such as the valley of the upper and middle Volturno and the Valle di Diano, the Tanagro, the upper course of the Agri and the basin of the Platano near Muro Lucano. Owing to the westerly displacement of the watershed, a system of watercourses, that of the Ofanto (Aufidus) has been developed on the eastern slope which reaches backward till close upon the plain of Campania. This river is the longest of Southern Italy and runs in a markedly transverse valley to the Adriatic which it reaches south of Monte Gargano. On the western side, besides coast brooks there are only to be named the Volturno and the Sele ; the first belongs to the district between the Abruzzi and Monte Matese, it runs twice through a deep glen and has twice to cross the range ; on the second occasion it enters the plain of Campania through which it meanders in many curves. The Sele is short ; it rises as a mighty stream at the foot of the Cervicoalto plateau, receives the Tanagro from the Valle di Diano and empties itself into the Gulf of Salerno.

We must look upon the corner of land between the bays of Tarentum and Policastro as the end of the Apennines, for the mountains of the Calabrian peninsula are of essentially different build and formation and correspond with those of Northern Sicily, Sardinia, and Corsica.

But before speaking of these there remain certain parts of the interior of the curve of the Apennines in Central Italy to be discussed. In the wide region between the sea on the one side and the curve deter-

mined by Volterra, Perugia and Rome on the other, we have a hilly country with indistinctly marked sierras or ridges. This is only indicated by the names of individual cliffs such as Mount Soracte (Monte Soratte) near Rome, Monte Cetona, near Chiasi. Instead of these occur from Sienna to Rome a series of conical mountains of more or less importance and elevation which are of volcanic origin, each being a small independent centre for river valleys. Some have broad crater-like depressions containing a lake, others end in a point without craters. These mountains are the Monte Amiata (5,656 feet), the crater of Bolsena (2,460 feet), Vico (1,663 feet), and Bracciano (538 feet). Their line is in the same direction as the Apennines and with them they form a longitudinal valley along which from Orvieto till close by Rome flows the Tiber. South of Lake Bracciano the river bends away from its seaward course, but beyond the bend of the Tiber, forming the last member of the series, lie the Alban Mountains (Monti Laziali) also of volcanic origin, with several concentric rings of hills and crater-like depressions. The central point, Monte Cavo, is 3,136 feet high and is the highest mountain within a wide circumference. For around it extends a plain as far as the Sabine and Volscian mountains on the one side and the sea on the other, which continues on the other side of the Tiber and is called the Roman Campagna. It is a level undulating land rising into the Roman uplands a good way further north. These conditions are repeated in the Campanian plain, where Vesuvius rises in solitary grandeur to the height of 4,430 feet roughly, with the smaller volcanoes of the Phlegræan Fields and the mountains of Camaldoli (1,476 feet) near Naples, also solitary. This may also be said of the Roccamonfina<sup>1</sup> (3,297 feet) at the southern end of the Monti Lepini and of Monte Vulture (4,374 feet) on the eastern edge of the Apennines near Melfi.

The Terra d' Otranto and the adjoining district as far as the Ofanto form a uniform plateau having a steep descent to the sea in some parts and of an average height of 600 feet. The greatest elevations on this plateau are called Le Murgie, a broad flat ridge only 2,230 feet high. With the exception of a few brooks at the edge there are no watercourses, as the water makes its way through subterranean passages. Connected in a geological sense with this plateau are the small mass of Monte Conero (1,876 feet) on which stands the city of Ancona, and Monte Gargano. This is an isolated mass completely surrounded by the sea and the plain, precipitous to the south and sloping more gently

<sup>1</sup> The mountain is properly called Monte Croce, and it is the town lying near the summit, which is Roccamonfina (*rocca* means tower). For the sake of brevity this mountain has long been known in geologic works as Roccamonfina, and for this reason it has been so designated in the present work.

to the north. Here the sea encroaches with a lagoon, the Lago di Varano. The highest point (Monte Calvo, 3,464 feet) completely dominates the plain of Apulia (Tavaliere di Puglia) as far as the mountains, and in the spring when still covered with snow it affords a magnificent spectacle.

### III. CALABRIA, SICILY AND SARDINIA

These three masses of land together with Corsica, not being related to the Apennines have a relief of quite a different kind. Here we have isolated fragmentary ranges bound together in irregular fashion and producing unsymmetrical curves. In Calabria four or more such mountain groups can be distinguished, five or six in Sicily, six or seven in Sardinia, and two in Corsica. While these form isolated groups elsewhere they lie in Calabria in a row one behind another, and this causes the narrow form of this region and the large number of bays on the coast. Closely adjoining the Apennines there are the mountains of the coast between Castrovillari and Cosenza forming a narrow uniform ridge, then comes the circular mountain district of the Sila, and thirdly the ridge of Mount Pecoraro, and fourthly the continuation of this, the Aspromonte.

The fertile valley of the Crati is sunk between the two first, and they are divided from the southern nucleus by the depression near Catanzaro. The boundary chain is formed by the mountains of Castrovillari, which are difficult to traverse, the two sides being united only by bridle paths. The Sila is an inhospitable wooded region difficult of access and only to be reached by the valley of the Neto. It rises to the height of 6,332 feet in the Botte Donato. The Aspromonte with Monte Alto (6,358 feet) rises abruptly from the sea, and gives form and direction to the Straits of Messina with its foot which spreads out on three sides.

In Sicily two directions are perceptible among these independent mountain groups, one towards the east from Messina and the other towards the south explaining the triangular shape of the island. The Peloritan range, the Nebrodes, the Madonie, and the mountains of Palermo form the northern border. The slope is generally south and south-west, but this is interrupted by the conical mountain of Etna, which stands in front of the Nebrodes, and joined on to this is the mountain country of Minco (Monti Erei) still in the south-east of the island.

The area between the Monti Erei and the Monti di Calatafimi, which is thus the main mass, is occupied by a plateau which passes over in the south into a hilly plain, and in the north into an irregular



RELIEF MAP OF ITALY.



mountain country, in which last, but only in its south-eastern region, we can recognize an evident trend from east to west.

The Peloritan range is the companion piece to Aspromonte, though its highest point, Pizzo di Polo (4,025 feet), falls short of the latter in height, and it fills the whole north-east corner of Sicily. Its direction is NNE.-SSW. and it is a wild rugged stretch of mountains. At Monte Tre Fontane (4,509 feet) it turns westward to the Nebrodes (Monti Nebrodici). The gentler slope of these last is at first towards Mount Etna, but later this condition of things is reversed and the longer slope lies towards the south. The culminating point of the ridge, Monte Sori (6,056 feet), stands just half-way between the sea and the foot of Etna. On the Nebrodes follow immediately the nucleus of the Madonie (6,480 feet) with nearly similar descents on every side. Except for short mountain torrents flowing north or south-east the waters in this part of the island flow to the south and collect in two larger rivers, the Fiume Alcantara whose course is round the northern foot of Etna, and the Fiume Simeto, which skirts it on the south and west. The district drained by the Simeto reaches in the valleys of the Salso and Dittaino as far as the middle of the island where stood the ancient Henna, now Castrogiovanni, designated in antiquity as the "Navel of Sicily." From this the waters radiate into the glens between the individual masses of mountain, although it is by no means one of the highest points of the island. There and at Monte Salvatore, on the southern side of the Madonie, lie also the springs which feed the second named river, the Salso, whose mouth is near Licata, so that this flows nearly right across the island. The Salso bore the name of the Himera in ancient times and was said to flow to the south as well as to the north, the fact being that the Fiume Grande, which also rises in the Madonie, and flows to the Tyrrhenian Sea through a deep ravine was also called Himera and believed to spring from the same source. Considering the chalk formation and the extensive caverns this is not impossible. Westward from the Madonie the channel of the Fiume Torto encroaches far upwards into the land and divides the mountains of Palermo from those we have named. By this valley runs the longest route from one coast to the other; it connects together the towns of Termini, Imerese and Girgenti. Beyond this is a somewhat wild and little known mountain district, in which the east to west direction prevails, as in Monte Cardellia (52,98 feet) near Rocca Busambra and in Monte Camarata (5,180 feet). This mountain section pushes its spurs far into the sea near Palermo, and one part of it is the beautifully shaped Monte Pellegrino so well known in pictures (1,968 feet).

These chains nearly all cease at the deep depression called the Gulf

of Castellammare, and the north-west is filled with single cliffs and isolated masses, the most important of which are Monte Sparagio (3,905 feet) on the peninsula of Cape San Vito, Monte San Giuliano (Eryx, 2,460 feet), the limestone mass of Capo Boeo (2,464 feet) and the Montagna Grande, near Salemi. The Ægæan Isles, Levanzo and Favignana, are crags of considerable size lying in the sea, and are doubtless the continuation of those of Sicily. The river Belice, flowing into the African Sea, is the principal watercourse of Sicily. It takes its rise in the district between Palermo and Alcamo, and the basin drained by it reaches nearly to the Tyrrhenian shore.

Etna, or Monte Gibello (10,870 feet), is the highest mountain of Italy outside of the Alps and is covered with snow for a great part of the



PALERMO AND MONTE PELLEGRINO.

year. Solitary, like most volcanoes, it rises in typical conical form south of the Nebrodes and is girt by a deep valley drained by the Alcantara and the Simeto. The alluvium of this latter river has formed a plain, the only tract of depression in Sicily, which doubles the apparent height of Etna. Finally we have to the south of the Simeto the moderately high plateau of the Monti Erei (Monte Lauro, 3,232 feet) with its radiating river system caused by the uniform slope on every side.

Sardinia is more complicated, being composed of yet more separate elements than Sicily, while there is no mistaking the fact that especially in the northern section of the island there is a prevalence in the mountains of a NW.-SE. trend. The Monti del Gennuargentu with Brunca Spina (6,584 feet), form the nucleus of the mountain system. These have a somewhat steep slope towards the east, but a longer one on the other sides, and thus the river system in the first direction is small,

but richer in the others. Adjoining this centre there are first in the north Monte Alvo (3,677 feet), then the chain of the Monti d' Ala (also called Monte Acuto) which runs diagonally across the island and at its other extremity bears the names of Catena Marghine and Monte Nieddu (3,280 feet). In front of these lies Monte Limbara (4,987 feet) and the mountains of Sassari. The rivers Tirso, Posada, Padrogiano and the Upper Coghinas flow in longitudinal valleys between these chains. West and south-west and separated from the centre by the NW.-SE. ridge of the Campidano, lie the two mountain knots of Monte Linas (4,052 feet) and Caputerra, containing the three heights of Monte Orri, Monte Narcao and Punta Severa (3,147 feet). Monte Ferru (3,442 feet) in the middle of the western side is quite independent of the other systems ; it is a volcano with radiating valleys.

Corsica consists of two segments of unequal size. Two-thirds of the island are occupied by a range running north and south with NE.-SW. offshoots ; this has a gentle descent towards the west, but is rugged towards the east. Its position is determined by the mountains Cima di Ravella (4,860 feet), Monte Benoso (7,733 feet), Monte Rotondo (8,612 feet), and Monte Cinto (8,891 feet). Fundamentally the conditions are similar to those in the north of Sardinia, but the relief, owing to the smallness of the island, is less sharply marked. The several spurs jut out into the sea in the west and form promontories. They are divided by narrow valleys. The ridge in which they unite, like that of the Apennines near Parma, is a pseudo-ridge in respect to its geological origin. The second mountain district embraces the north-east of Corsica with the peninsula of Bastia, and is connected by the Island of Capraea with the Tuscan Archipelago and many elevations on the coast of Italy. This mountain country is cut in two by the Golo, the northern section rising to the height of 5,045 feet in Monte Asto and 4,290 feet in Monte Stello on the peninsula.

There is a complete absence in Corsica and Sardinia of plains of any extent, and indeed with the exception of Lombardy they occur very sparingly on the mainland.

The Roman Campagna, the plain of Campania, the depressions on the Gulf of Tarentum, the Tavoliere di Puglia and the plain of the Simeto in Sicily sink into insignificance as compared with the extent of the mountainous districts. The plain of Lombardy is more extensive but it is not quite devoid of elevations which break the monotony of the flat country between the Alps and the Apennines in a pleasing manner. The chains which push forward from the south near Pavia only merge into the plain in the middle of the trough close to the Po. Then come on the lower Adige the volcanic Monte Berici (1,375 feet) and Colli

Euganei (1,985 feet), with no intermediary valley. At the other end of the plain, similarly united, lie the Monti di Torino, or Mountains of Montferrat, which with their offshoots come so near to the Ligurian Apennine near Asti that only the Stura and Tanaro make use of the gap, the other rivers together with the Po having to make a wide circuit around this obstacle. The plain, which is elsewhere 50 miles broad, is thus reduced at its narrowest place near Turin to  $16\frac{1}{2}$  miles. The dip and other characteristics of the plain of the Po may be postponed till we come to the discussion of its river system.

From all that has been said it will be seen that Italy is a mountainous country and that its level ground is essentially less in extent than the districts of mountain and hill. The lofty wall of the Alps in the north, the central range of the Apennines, often over 4,000 feet in height, and the considerable elevations on the islands, cause the average height to exceed that of Germany, Great Britain or France. The following table of the mean heights of the different countries of Europe drawn up by Leipoldt is of course only approximate but is, nevertheless, very characteristic.

Switzerland . . . . .	4264·8 ft.
Iberian Peninsula . . . . .	2298·5 „
Balkan Peninsula . . . . .	1901·2 „
Austria . . . . .	1699·1 „
Apennine Peninsula . . . . .	1696·8 „
Scandinavia . . . . .	1404·5 „
France . . . . .	1292·0 „
Great Britain . . . . .	712·6 „
Germany . . . . .	700·9 „

Thus the Apennine peninsula is equal in height to Austria and is but slightly below the Balkan peninsula, but it is surpassed by the Iberian peninsula, which is easily explained by the broad plateau in Central Spain to which there is nothing analogous in Italy. Lastly its average height is more than double that of the German Empire.

## CHAPTER V

# Geological Construction

AFTER we have become acquainted with the general outlines of the relief of the country, the questions present themselves, "Whence come these differences between the mainland of Italy and the three large islands lying so close to it; this chain-like arrangement of the mountains, this occurrence of volcanoes in particular places, these great differences in the character of the two southern peninsulas, Calabria and Terra d' Otranto, these plains on the western side of the mountains, this striking shape in the bays of Southern Italy?" The answers to all these questions are afforded by the geology of the country, which tells us of its formation, its history, and its development in connexion with those of neighbouring regions. But in order to obtain the data necessary for a full understanding of the present shape of the land we must first deal with the general geological conditions, i.e. with the distribution and arrangement of the several geological formations, as well as with the theory of volcanoes.

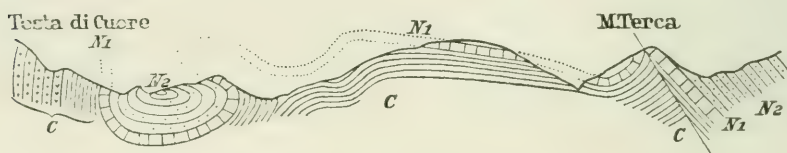
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### I. GENERAL GEOLOGICAL CONDITIONS

A glance at the accompanying geological map shows us at once that it is almost exclusively the younger formations of the Mesozoic and Cenozoic (tertiary) periods which have developed themselves in the Apennine peninsula. The Palæozoic and Azoic formations only occur in the Alps, in a few spots in Tuscany, in the islands and in Calabria, and this already marks a difference between these latter districts and the Apennines proper. The most recent of all, the Quaternary deposits, are limited in the mainland to the Po-valley, while volcanic rocks (lavas, tufas), though distributed over the whole region, appear in any considerable extent only along the Tyrrhenian coast.

In the Western Alps the oldest portions (or Primitive Mountains) occupy the greatest part of the range from the sea to Monte Rosa. These are mighty masses of gneiss, often granular and granite-like, alternating as we ascend with mica-schists of very various mineralogical composition, until these latter appear alone. The mica-schist is partly composed of normal micaceous rocks, partly of hornblende, glaucophan, staurolith, sillimanite, turmaline as principal ingredients,

being everywhere rich in granite, epidote and iron ore. One rock very distinctive of the region is the green-slate, which abounds in amphibole, epidote and chlorite. Its origin is still an open question, being by no means clear; it might well be that it is one of the more recent rocks, not belonging at all to the primitive system, and that these were crystallized and variously transformed (metamorphosed) by pressure when the Alps were evolved. The same holds of the extremely plentiful calcareous slates and calcareous mica-schists which approach the archaic slates in mineralogical composition and structure, but here and there contain petrefactions of the Mesozoic formations, so that such occurrences can now be safely disregarded. There are besides in the primitive mountains numerous masses of granite and veins of porphyry, diorite in huge layers, and serpentine. The Gran Paradiso on the one hand and the region south of the Dora Riparia on the other may serve severally as types of these. Both have in recent times been carefully investigated by the Italian geologists.



SECTION OF SUPERPOSED STRATA IN THE MARITIME ALPS.

C Chalk;  $N_1$  and  $N_2$  Eozoic Nummulites.

All archaic rocks give the impression of having been subjected to powerful pressure; the several minerals are crushed and smashed, the micas and hornblendes have a parallel arrangement and are drawn out in one direction. A multitude of new forms are forthcoming among the minerals, united together by combination and pressure, while the cavities are filled with epidote, chlorite and albite as well as quartz, and the débris are cemented into solid rock: the granites assume a slaty cleavage through the parallelism of the scales of mica, the diorites turn to hornblende and gneiss or amphibolite-schist, the serpentines to greenstone, stratified marbles to calcareous slates, or calcareous mica-schist. There can be no doubt that the pressure at the original formation of the Alps brought about great alterations, frequently extending to considerable depth, so that the aspect of the rocks is quite different from what it was originally.

We meet with a similar series of layers in the primitive mountains of the Valtelline, on both sides of the Upper Adda, and we can follow them up to the main ridge, to the Splügen, Maloja and the Bernina group. At the end of the valley of the Adda the gneiss and slates turn off northwards, giving place to the more recent formations of the

southern slope, beginning at Lago Maggiore. It is only between the rivers Adige and Piave that a small fragment again appears. This forms the nucleus of the range and has been liberated from its covering of sedimentary rocks by a convulsion of especial violence.

The islands of Corsica and Sardinia, part of the Tuscan Archipelago, the north point of Sicily and the mountains of Calabria also belong to the primitive series. Corsica consists almost exclusively of gneiss and mica-schist with immense layers of serpentine, as well as a covering of porphyry, but the gneiss takes up two-thirds of the whole western side and forms the central ridge. Schist with masses of serpentine, occupies the north-east corner of the tableland, and the mountains of Bastia. A few remnants of early tertiary schist (eocene) are scattered on the boundary between these and the gneiss, which points to a displacement of the two sections along a line of cleavage. Sardinia, as regards its eastern half, is the direct continuation of Corsica, and while without gneiss and granite it possesses a covering of slates, forming a narrow band from the Gulf of Asinara to the culminating point of the island and thence down to the Gulf of Orosei. The great cleavage which runs along the west coast of Corsica is continued to form the boundary of this part of Sardinia, taking its way through the middle of the island from the Gulf of Asinara to that of Cagliari. It separates the south-east and north-west corners (Nurra and Sulcis) with their independent groups of mountains from the main body of the island, and is thickly studded with eruptive rocks. The masses which project into the western Mediterranean belong, as it may be as well to remark in this place, to the Palæozoic formations, and their nuclei consist of Silurian and Cambrian schists, interrupted by granites and older porphyries, to which are to be added in Sulcis trachyte and liparite.

Granites, accompanied by a sheath of schist, are the principal rocks of the Sila, of the mountains of Cosenza, of Monte Pecararo, and of Cape Vatican. Here we find isolated blocks, framed with tertiary or more rarely cretaceous strata; these are at present disconnected, but constitute the remains of a larger mass of country consisting of primitive mountains, to which also belonged the islands just mentioned. Further débris present themselves in the gneiss of Aspromonte, and the Peloritan range, and also in a part of the Nebrodes in Sicily, where gneiss and mica-schist prevail, while they are wanting in the rest of the island. That these fragments were originally connected is rendered more probable first by the fact that fragments of gneiss and granite are thrown up with the lava of the Lipari Isles, and secondly, because in the Tertiary deposits of the Tyrrhenian coast a great quantity of crystalline shingle has accumulated. This shingle cannot have

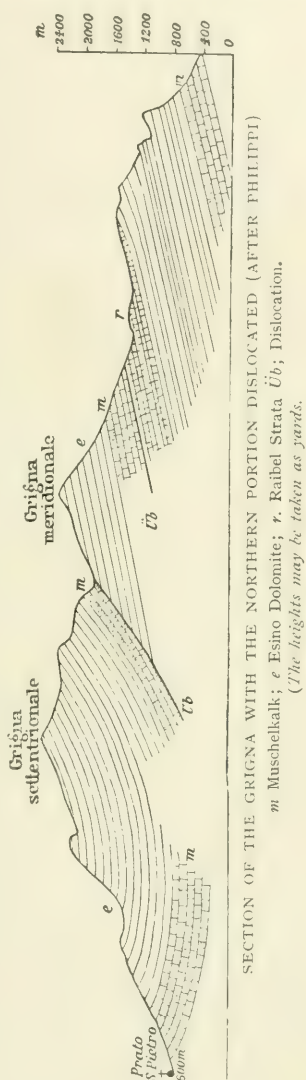
come from the Apennines, but can only have been derived from a submerged continent, which took in the existing Tyrrhenian Sea.

Above the azoic primitive rocks lie the series of Palæozoic formations, Cambrian, Silurian, Devonian, carboniferous, and Permian. Of these only Cambrian, Silurian and Devonian strata are clearly distinguishable in Sardinia—Devonian is said also to occur in Calabria—but elsewhere primitive rocks are represented by a complicated schist not yet classified; this immediately adjoins the mica-schist in Calabria, and forms with it a geological whole. In the Western Alps a large portion of the calcareous mica-schist should be classed with these, although the traces of fossils have been obliterated by the metamorphosis; but in Friuli they can be classified to some extent owing to the organic remains found in them. It is only with the carboniferous and Permian strata that these deposits gain wider extension. But as the two formations are almost indistinguishable in Italy, it is better to speak of Permo-Carboniferous deposits. These nowhere contain coal to any important amount, and all attempts to discover it by boring or prospecting have completely failed, and may be considered hopeless. Together with purely marine deposits in the Carnic Alps and Sicily, with upper carboniferous or Permian fauna, characterized by fusulinas and goniatites, occur sandstone, arkose, porphyry and their tufa. These are found on the western side of the Ligurian Bay, between the valley of the Stura and Genoa, again in the mountains of Massa, the Apuanic Alps near Pisa, and the mountains north of Grosseto and east of Orvieto. Through the vegetable remains and scattered minute indications in the coal these have been determined to be inland or shore sediments. They show us that an island or peninsula must have existed, at that period at least, in the northern part of the Tyrrhenian Sea, which possibly formed part of the then existing continent of Central Europe. How far this stretched to the south has not yet been fully ascertained owing to the want of the requisite information regarding Southern Italy and Sicily. It appears, however, as if Calabria and Sicily ought to be considered as part of it.

During the period when the Mesozoic formations were in progress (triassic, jurassic, cretaceous) the Italy of to-day must have been the scene of various and important changes of level. It was at one and the same point successively far below the sea, then dry land, and once more a sea, which in turn must have disappeared at the beginning of the Tertiary period.

What actually went on is not yet sufficiently well known to us in detail, especially in Southern Italy, where interchange of sea and land was most frequent. We are able to draw up in general outlines the accompanying sketch, which exhibits contours which, while different

for different places, are often in agreement. At the base of the Alps the trias still continued as the formation of the shore during the deposition of the Verrucano and the Servino. There must have been lagoons in many places, as extensive beds of anhydrite and gypsum are interspersed in these strata; fragments of porphyry are also found, as, for example, in the district of Lago Lugano and near Bozen, the ashes and tufa of which were spread over sea and land in extensive and many-coloured deposits. The sea became slowly deeper from east to west, as we gather from the occurrence of various marine fossils, and the muschelkalk sediments of the middle trias penetrate as far as Piedmont. There are at first vast strata of dark limestones characterized by genuine ammonites, which have made their way from Central Asia with the advancing sea, then slates with a uniform widely distributed fauna of bivalves (Buchstein and Wengen strata). Now begins, however, the vast deposit of light-coloured dolomite limestones. In some localities these give rise to limestone cliffs partly formed of algæ, corals and thick-shelled bivalves, and their fantastic and picturesque shapes under the name of dolomites of Southern Tyrol are a delight to us at the present day. These are the esinodolomite, Wengen, Riffkalk, haupt-dolomite, conchodon-dolomite, mighty beds often exceeding 3,000 feet in height, of which the Grigna, near Lake Como, the Rosengarten, Schlern, Marmolada and other mountains are built up. In some places the Dolomite formation lasted into the jurassic period, in others it was broken into, or more often broken off, by deposits of clay or tufa. Among these the Raibel strata, lying between the esino-chalk and haupt-dolomite, possess the greatest importance as geological horizon and as forming between the harder and little stratified chalks a softer material for the formation of mountain and valley and for the flow of the waters. Above the haupt-dolomite appears another and



similar marine deposit, that of the Rhætian strata. The two together impart to the Lombard Alps the green well-watered upland pastures whose gentle slope and fresh, vivid colouring forms so beneficent a contrast with the wild, barren, greyish-white limestone.

In arranging and perfecting our general view over the geology of the district we are confronted with the most varied changes dependent on the alternations of the level of the sea bottom with the co-operation of eruptive rocks (porphyrite, melaphyre). The pulverization of these latter deposits has produced on and near the reefs, sometimes red or green tufic sandstone, sometimes conglomerate or breccia, changing in appearance at every step. Every here and there these must have reached above or near the surface of the water, and have formed atolls, as land plants are imbedded in them, and besides this there appear in great number masses of gypsum, the precipitation of which is only possible in enclosed portions of the sea.

In Central Italy the Lower and Middle Trias seem to be wanting, so that here land is to be assumed. In Southern Italy it commences with the esino-limestone; it first attains wide horizontal extension, however, in the schist system belonging to the Raibel strata, and indeed continues as far as Sicily in that form. This part of the sea must have been deep because numerous radiolaria have been found in the flints of the schist, and this group of animals is limited to the open sea. Besides this we have the haupt-dolomite, which indicates a local upheaval of the sea-bottom, and which is covered, as in the Alps, by the Rhætian, the last of the Jurassic formations.

The Rhætian period indicates an important displacement of the sea over a considerable portion of the globe, especially Central Europe. The German trias beds, hitherto shut off, were again brought into connexion with the ocean, and even in the Alps we may remark an encroachment (transgression) towards the west on the part of the Rhætian formations. At the same time the sea took possession of the district of Tuscany and formed intercalary sediments in Southern Italy and Sicily. In the southern districts the zone of marl mentioned above is as a rule absent, so that the Rhætian with its dark banks of limestone continues over the haupt-dolomite, from which it is only to be distinguished by close inspection and with which it forms a homogeneous mass. A similar thing took place in the Jurassic and, after an interruption, in the Cretaceous formations, and thus gave rise to the chalk beds, some 6,000 feet thick, so characteristic of the Apennines of Naples and Salerno, and which are described with sufficient frequency in the accounts of the Sorrentine coast, of Monte Alburno and of Monte Matese. The limestones are the chief representatives of the Rhætian formations in Central Italy also. They have lost their

original connexion and protrude as blocks or cliffs from the tertiary or volcanic coverings. To these belong Cape Circe, Mount Soracte, the mountains of Massa Marittima, so rich in ores, Montagnola Senese, Monte Argentario and the limestones to the west of Lake Bolsena. The existence of the Rhætian in the interior of the Apennines is not yet fully established, perhaps only for the reason that the subsoil has not as yet been penetrated to a sufficient depth. It is frequently so intimately bound up with the Jurassic formation that in the absence of fossils it is impossible to separate them.

The Jurassic formation with its three divisions (lias, dogger, grit) generally follows close on the trias. In the Southern Alps it forms an external band deeply encroaching on the bay of the Adige and consists of red, white or grey limestones rich in brachiopods or ammonites. In Central Italy it occurs in ridges quite similar to the triassic and Rhætian but forms longish folds on the inner side of the Apennines, and in the central chains, e.g. near Chiusi, Rieti-Terni and at Gran Sasso. The middle and upper groups are absent for the most part from Southern Italy, and the deposits formed there can only have been small. Apparently an island lay in the Jurassic Sea, including the districts of Capri, Cilento and some other points on the coast, but not attaining any very great dimensions.

The chalk makes its appearance in the Alps of Lombardy as the extreme border towards the plain of the older sedimentary rocks. It receives a wider zone, together with the jurassic, in the district of Belluno, before which lies the tertiary again, it penetrates the bay of the Adige in narrow strips but is entirely absent to the west of the range of mountains. These chalks are limestones with a fauna rich in rudista, large actæonella and nerinea, and there is also a chalky marl, white or red in colour, with a splintering cleavage and often thin laminar structure which has received the names of biancone and scaglia. In the Apennines we get two forms of quite different appearance; the first is a dark argillaceous marl with thin layers of chalky or stony marl, crumbling into splinters and easily disintegrated by frost, containing only rare and poor fossils, and the other consists of vast banks of coarse limestone ranging from dun to greyish white, in which occur caprotinas and orbitulinas in the lower portions, nerineas, actæonellas and spherulites higher up. Where these are found they are plentiful, but generally so closely imbedded in the rock that it is difficult for air and rain to disintegrate the latter and set them free. The clay or clay-like surface is principally formed in the Northern Apennines, the cretaceous in the Southern. In the centre the two occur together, though the former preponderates in the eastern districts, the latter in the western.

The chalk in Southern Italy lies unconformably on the jurassic deposits, and its situation indicates a depression of the sea-bottom, which gave rise to an extensive sea over the whole basis of the Mediterranean. The chalk makes its first appearance in the chains of Florence and Bologna, and, as in Central Italy generally, it forms the nucleus of the range. It covers extensive surfaces in the Monti Sibillini and the Roman Apennine, builds up the plateau of the Fucine Lake with all its secondary ridges, and is an important constituent of Gran Sasso. In the south it draws more towards the Tyrrhenian coast, where the mountains of Campania, Naples and Salerno belong to it, if not entirely, at any rate in their upper portions, and it also forms the principal part of the peninsula of Sorrento and the island of Capri. It extends to the primitive range of Calabria, where some masses of it cling to the edge of the precipices, and then re-appears in north-western Sicily, though only to a small extent. Its occurrence round the Gulf of Orosei in Sardinia is worthy of notice as a sign that this district also lay under the sea at that time, and finally it crops up in the three blocks of Ancona, Monte Gargano and Terra d' Otranto. At these last points it is accompanied by the limestones of the upper jurassic in such a way that these regularly make the under layer of the cretaceous limestone and compose the whole centre as well as the western slope of Monte Gargano, with the more elevated northern extremity of the Murgia. The stratification is simpler there than in the Apennines, and the formation is so nearly the same as those on the other side of the Adriatic that from a geological point of view these three blocks must be considered as isolated portions of the limestone plateau of Dalmatia, the remnants of a sunken strip of land, of which we obtain information otherwise only from the islands of Pelagosa and Tremiti, which are the only fragments of it still visible. In the Terra d' Otranto the chalk makes a broad uniform plateau, which nearest to Apulia is first without, but further on is accompanied by, a covering of recent tertiaries.

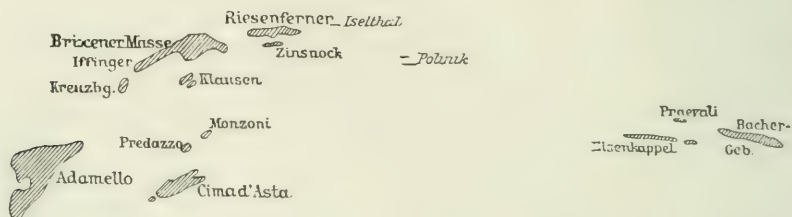
The Tertiary is the group of widest extent in Italy, and performs an important part in producing the plains, as well as in constructing the ranges of mountains, in all four of its divisions, eocene, oligocene, miocene and pliocene. This Cenozoic era is at the same time the richest in alternations of sea and land. The period of development of the Alps and the Apennines and of the rise of the present peninsula was after the close of its earlier half, and was accompanied by violent disturbances of the earth's crust. At its close we have again a period of great inroads by which the present seas on the one hand, and the islands and shape of the newly-formed mainland on the other, were once for all established. These geological events gave rise to a two-fold

division of the tertiary, a pre-Apennine (Eocene, Oligocene) and a later period (Miocene, Pliocene) the differences between which are marked by differences not only in the nature of the sedimentary rocks, but also in their extent.

The sea had attained its greatest extent in the earliest Tertiary times, and equally covered the Alps, the Apennines, and a great part of the basis of the Mediterranean. Its deposits over wide areas are uniform dark grey or black clay slates and marl slates with folds and worm tracks, but few fossils. This formation is called Flysch, and stretches from the Alps to the Abruzzi. There are banks of limestone in some places with nummulites, betokening the eocene, imbedded in them. In the Alps this flysch lies above the chalk to the thickness of 3,000 feet, and at the foot of the Julian Alps it takes in the lower country near Udine. It then appears in the caldron of Belluno, in the low mountains near Verona, in the valley of the Adige and the deeper parts of Montferrat near Turin. Its chief region, however, is the Apennines. The Ligurian section on both sides of the Gulf of Genoa consists almost exclusively of eocene slates, which make a striking impression on the traveller by railway from Alessandria to Genoa. The railways from Parma to Spezia and from Bologna to Pistoja run chiefly through eocene sediments. Rounded gentle slopes, deeply cut valleys with broad pebbly bottoms and dirty muddy water, are characteristic marks of this formation. The rock crumbles after a fall of rain; it is completely broken up by frost and thus easily forms landslips, a great danger to roads and railways, and only to be remedied by alteration of route or by thorough drainage. As a rule nothing grows on these barren slates and clays but scanty grasses, so that extensive tracts lie nearly bare, allowing free play to the rain, which generates flowing waves of mud, which from time to time trouble the country near the Bologna Apennines. The slopes of the valley of the Ofanto in Apulia are also greatly exposed to danger in this respect. Eocene forms the subsoil of Tuscany; it is the most important constituent of the chains between Arezzo and Perugia; it fills up the longitudinal valleys of the Abruzzi between the chalk ridges, and makes the third geological element of the Basilicata, the others being chalk and trias. We find eocene in Calabria surrounding the nuclei of granite and gneiss, in Sicily in the Nebrodes, Madonia and the western heights as well as in Sardinia and Corsica, a proof that these islands have been for some time beneath the sea since the Chalk period.

With the upper eocene begins the elevation of the ranges of mountains. Then were built up the first chains of the Alps, which were quickly inhabited by plants and land animals (snails), and the remains of these washed away from the heights by the rain are buried in the

deposits of the oligocene sea. In Lower Italy the flysch gives place to vast beds of limestone with alveolinas and orbitoids. Everywhere are found limestone coast algæ with lithothamnias, a proof that the water was shallow. Simultaneously with these movements of the crust of the earth the elevation of the granite masses of Adamello and Cima d'Asta in the Southern Alps is said to have taken place. This granite in laccolithic form penetrated into the upper strata of the earth's crust and partly metamorphosed it. It did not, however, reach daylight, either on land or at the bottom of the sea, and consequently did not give rise to volcanoes. The numerous serpentines in Liguria, in the region of Bologna and in Tuscany were equally deficient in force, and all stopped short in the eocene strata. Most of them congealed within the crust, some few may just have reached the sea bottom. The chief part of the elevation of the Alps was completed during the Upper



THE GRANITE MASSES OF THE DEPRESSIONS AROUND THE ADRIATIC (AFTER SALOMON).

Eocene, and Oligocene periods, so that the older strata were often so much altered by the pressure as to be unrecognizable. Then the boundaries were first fixed of the great depression which we know as the Plain of the Po, its northern limit at least being marked, and the then existing strata making their way into the sea. The general outlines, too, of Corsica and Sardinia must have been fixed, though in truth only as a part of a larger Tyrrhenian Continent.

The Middle Tertiary (miocene) which follows the Oligocene has no share in the elevation of the Alps; in the south as in the Swiss plateau it was deposited on already existing chains, though at the same time it may have been dislocated with them at a later date. But the Apennines belong fundamentally to the Miocene. The upheaval from north-west to south-east which set in during the Oligocene period, threw up first the chains of Liguria and then the others by degrees, and thus the miocene sediments are chiefly produced by the washing away of the eocene heights—clay, sand or conglomerate with fragments of serpentine or limestone. At the close of this period an archipelago must have existed, or a ragged coast region in which lagunes completely cut off from the sea produced gypsum,

together with a contemporaneous deposit of mud rich in organic remains. From this gypsum come the beds of sulphur which we can trace in a wide curve from Bologna to Sicily. These also occur locally within the Apennines and in Tuscany, a sign that no connected mass of land was yet in existence. Even if, however, it did exist, it cannot have been for a long time, for in the Pliocene period the whole region of the Apennines, with the exception of the most elevated portions, were again sunk below the surface of the sea, and it was apparently only the western stretches in Tyrrhenia that remained dry land. Contemporaneously the Tuscan chains were cut off at the southern extremity by the encroachment of a wide sea basin, and in the cleavage fissures of this appeared the first signs of volcanic action. The trachytes of Roccastrada, of Monte Amiata and of Monte Catini date from this epoch and played the same part as is played at present by the Lipari Isles. The sinkage must have been very considerable, amounting in places, in the opinion of an Italian geologist, to something like 3,000 feet. This is founded on the fact that pliocene deposits form the tops of many of the heights of Southern Italy, and that the trias and chalk of the highest mountains are found to be perforated by the pholads of the pliocene sea.

The detritus of the coasts and rivers of the Tyrrhenian continent furnished the material of which the pliocene sediments of the Apennines were constructed, and this land was the abode of numerous herds of mastodons and elephants, whose bones were imbedded in the sand of the sea shore. A bridge of land then led from this region of Italy through to Northern Africa. The bones of the same species of mammals occur in the caves of Liguria, in Sardinia, on the Tyrrhenian coast, in Sicily, Malta and Tunis, so it appears natural to assume that the submarine plateaux and shallows adjacent to the south coast of Sicily are remains of this tableland. Often these must have been really in the form of grassgrown limestone plateaux, furnished with subterranean channels resembling Dolinas<sup>1</sup>; for many bones have evidently been washed down into crevices and subterranean caverns in company with the red loam caused by the disintegration of a Karst-like district, have collected at the bottom and have then usually been cemented into a firm bone breccia by limestone stalagmites and travertine.

The pliocene sea filled up the plain of the Po as far as the Alps, and has left behind many deposits, some marine, some brackish, in Montferrat, the lake district of Lombardy, and Belluno. These marine bays probably communicated with the open sea by a strait

<sup>1</sup> Dolinas are holes leading to the subterranean cavities or channels formed by the action of washing away soluble strata.

studded with islands, its course lying west of a line from Ancona to Monte Gargano, for pliocene is quite absent from these blocks, and from Dalmatia. The Adriatic cannot have then been in existence; it was, so to speak, pushed back westwards. The arm of the sea then passed on over the plain of the Gulf of Tarentum southwards, and over the Ionian Sea round by Sicily to Tunis. From it rose as islands the primitive range of Calabria, the northern heights of Sicily, the plateau of Dalmatia, and perhaps the Medina Bank. Sardinia, Corsica, the whole of Northern Sicily and Northern Tunis, show no sign of having been covered at that time by the sea, but were dry land, and agreed in their fauna with what is now Africa.

But this division of land and sea had no continuance. A second upheaval setting in about the middle of the Pliocene period at last created the collective Apennines. Simultaneously there took place a breaking up of the Tyrrhenian continent, an event which has been looked upon as the cause of the upheaval, and of its north-easterly action. Only Corsica, Sardinia and the Tuscan Archipelago were left. By the crevices were forced up the lavas of Monte Ferru, and the liparite of Southern Sardinia, the Lipari Islands and the Ponza Islands. Among these the radial grouping of the Lipari Isles gives sufficient evidence of the existence of certain great submarine fissures, hidden under the sea. The Apennines pushed towards the east, built up its long chains, stretching north-west to south-east, and pushed over upon the Dalmatian tableland, which then split open, and in the new channel alongside of the new range of mountains flowed the Adriatic Sea. We see Murgia with Terra d' Otranto, Gargano and the block of Ancona maintaining their ground as remains of this tableland.

It is significant that the broad and somewhat shallow bay between the two last-named and the greatest depths of the Northern Adriatic, lie just opposite the highest elevation, the Gran Sasso with the upland of the Abruzzi. The damming up at Monte Gargano also brought about the fissure on which stands the volcano of Monte Vulture. Then along the whole line, from Ancona to Tarentum, the former sea bottom was laid bare, tacked on to the mountains as a narrow isthmus, joining Gargano as well as Terra d' Otranto to the mainland as peninsulas. Of the pliocene straits there now remains only its southern section, the Bay of Tarentum. The narrows between the masses of Calabria rose above the surface of the sea, producing the Calabrian peninsula, while only one portion, the Straits of Messina, remained, or rather were newly placed there.

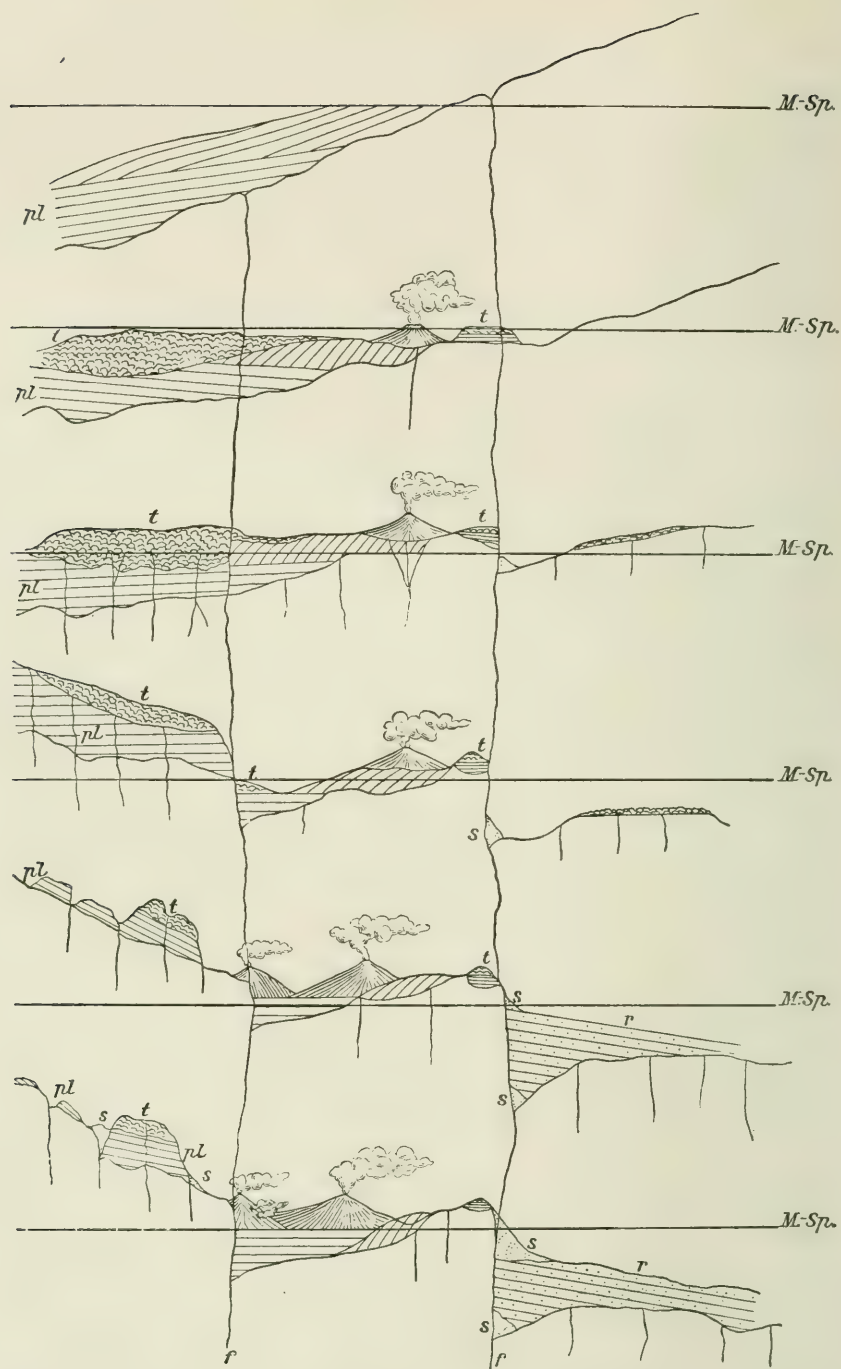
Closely connected with these movements was the eruption in Sicily of Etna, whose cone with its lava and ejected fragments rose

to the height of 10,000 feet, finding an older analogy in the basaltic region of the Monti Erei.

The remains of the inner chains rose to daylight within the curve of the Apennines as cliffs of triassic, jurassic, or chalk, and took in what is now Tuscany. The varied composition of the soil of Tuscany, its obvious leaning upon the Apennines, as well as the isolated patches found in it are thus explained in a very simple manner. But the fissures produced in the earlier period split further south in the line of the Apennines, and produced a long series of phenomena: the Lake of Bolseno, the volcano of Cimio, the Lago di Bracciano, the Alban mountains and their cover of lava ashes and tufa, wrapping up all that was earlier. From this we are able to admit a slow displacement from north to south of the centre of eruption. Indeed the continuation of this main rift beyond the Alban range is denoted by the volcanoes of the valley of the Sacco, the Ernici, numerous small eruptive channels on the line joining Monte Cavo in the Alban volcano, with the Roccamonfina. This same line marks the boundary of the Abruzzi, from the spurs of the Monte Lepini. The series of sections of the Roman campagna, given by Portis, which we reproduce in the accompanying figure (p. 48) presents to the eye the mutations in the relief of a particular region during the period of the lower tertiaries.

We have seen the chain in Tuscany cut by an irruption of the later tertiaries, and this phenomenon is repeated in the Neapolitan chain. The Monti Lepini stop short at the Gulf of Gaeta in just the same way, and the processes which have ceased in the north became effective in later time on the coast of Southern Italy. Important displacements seem to have taken place here since the time of the Romans, and Vesuvius as well as the Phlegræan Fields are still in activity on the yet open fissures. The Gulfs of Naples, Salerno and Policastro interrupt the chain of the Apennines as Tuscany does further north, but they have not been altered by having a complete casing of sediment or volcanic ashes.

Thus the Alps and Apennines were completed when at the end of the Tertiary period mighty masses of snow were deposited in Northern and Central Europe, heralding in what is called the Ice Age. The Alps were covered with glaciers, whose feet descended from the heights into all the southern valleys, pushed on as far as the edge of the plain of the Po, and there piled up their moraines so as to give to the landscape the effect of moving waves. The geological effect of a glacier, as is now generally believed, consists in reducing the height and size of the range, while the collective results of disintegration of the slopes and heights, as well as to some extent the masses swept out of the valleys, are



VARIATIONS IN THE LEVEL OF THE COAST AND OF THE ROMAN CAMPAGNA DURING THE PLIOCENE AND QUATERNARY PERIODS (AFTER PORTIS).

*M.Sp.* Level of the sea; *pl* Pliocene Clays and Sands; *t* Volcanic Tufa; *s* Sea Beach; *r* Later Quaternary Marine Deposits; *f* Lines of Dislocation. Between these are the smaller cleavages, above which rise the Alban Mountains.

borne downwards on, in and under the ice to be heaped up below as terminal, medial or lateral moraines. The Alpine glaciers filled all the valleys and trenches, and pressed down over small barriers into the secondary valleys, as the glacier of the valley of the Adda into the district of Lugano, the Oglio-glacier into the valley of the Serio, the glacier of the valley of the Adige into the region of Lake Garda, over the valley bar of Arco-Mori. The terminal moraines furnish evidence of the thickness of these ice-streams, as we find them arranged in lines high above the bottoms of the present valleys. At the branch of Lake Como the glacial *débris* lie 1000 feet and more above the surface of the lake, at the foot of the Valle di Susa. Near Turin scratches made by the ice are to be seen 1300 feet above the present bottom of the valley. Only the highest points protruded above this sea of ice.

It was indeed held at an earlier time that the glaciers which descended from the heights and flowed in valleys too narrow for their volume had had much to do in hollowing, or as it were ploughing, out the ground, and that the deep channels of Lake Maggiore, Lake Lugano and Lake Como, descending below the level of the sea, had received from them their fiord-like form and their depth. This certainly does not hold in the case of Lake Como, and it is at least doubtful in that of the others. These seem to be ante-diluvial depressions, perhaps arms of the sea in pliocene times, though at the same time the bottoms may have been cleared of *débris*, and thus deepened by glacial action. Their origin really lies in the production of fissures by various kinds of pressure, as has been proved with certainty in the case of Lake Lecco. In front of these lakes the glaciers built their moraines, hills of *débris* in concentric series and pressed close together, with numerous irregular depressions often without effluents, leading to the formation of ponds or peat. In the case of steep slopes these fall down against the range and completely surround the exit of the valley. It was through obstacles of this kind that the rivers Dora Riparia, Ticino, Adda, Mincio, had to force their way, forming lakes behind the ramparts, as Lake Garda, which is still dammed up by the moraines at its southern end.

There are large moraine districts of this kind at the west of the district of Rivoli, at the exit of the valley of the Dora Riparia, and the district of Ivrea with the Dora Baltea. There the moraines form a delta-shaped expanse broadening outwards,  $12\frac{1}{2}$  miles across, and reach the respectable height of 3000 feet in the mountain named Serra, a rugged ridge on the north east side. They enclose an old shallow lake bottom, where a few small lakes in circular depressions still exist, the remains of the earlier

one, drained by the deepening of the river bed. A moraine-district connected with this runs from Lago Maggiore to the Adda, with a varying breadth of  $7\frac{1}{2}$  to  $12\frac{1}{2}$  miles. In it lie all the lakes of the Brianza, Lago di Varese, Lago di Erba, Lago d' Alserio, Lago d' Annone, Lago di Pusiano. Lastly, Lago d' Iseo and Lago di Garda are closed in at the southern edge in a similar manner, and it was upon moraine hills that the battle of Custoza took place in 1866.

The last great cone of *débris* is that produced by the glacier of Tagliamento, which to judge from its position on the pliocene, may perhaps have reached the sea. Many geologists have come to a similar conclusion with regard to the other glaciers, the plain of the Po having been still in their opinion a marine bay during the ice-age, and refer the Alpine boulders observed on the hills of Turin to floating ice, generated by glaciers and stranded there. However this may be, it is a fact that the filling up of this pliocene gulf took place principally in diluvial times, and that it was chiefly caused by the melting of the glaciers. It proceeded first from the edge of the mountains towards the middle, then eastward along the bed of the Po, and is now still in progress before our eyes in the delta of the river. According as the ice diminished by melting, sometimes at a quicker, sometimes at a slower rate, or even at times increased and again pushed forward its moraines, the rivers flowing from it would exhibit their activity now in heaping up *débris*, now in erosion of the ground. Thus were formed terraces of *débris* which sloped away from the Alps or the Apennines like staircases. Two, and occasionally three, can be recognised, of which the higher is the earlier, the lower the later. Through these terraces the main stream and its tributaries have dug out their present course, which they are constantly making deeper. These *débris*, sands, and gravels conduct a quantity of Alpine water underground to the Po, and constitute a reservoir of springs and waters for the whole plain of Lombardy.

The Ice Age had not so marked an influence in the Apennines, firstly because they lay further south, and secondly because they did not attain the same altitude as the Alps, and thus they did not receive so heavy a deposit in the form of snow. In the north and south valleys of the Ligurian portion we can trace a few moraine barriers, but these disappear by the time we come to the Bolognese portion. Besides, the uniformity in the material of the rock raises a difficulty in deciding that any existing valley barriers are due to moraines, as these obstacles might easily be the result of landslips, which as we have seen above are by no means infrequent in the Apennines. Traces of glacial action are also met with at the Gran Sasso, the next place where they might have been expected, and in a few of the mountains of

Southern Italy, Monte Pollino and Monte Sirino. Here, however, there can have been only a small accumulation of ice, what is called a "hanging glacier." The masses of *débris*, however, and the vast beds of travertine, which fill up the basins of many of the valleys (district of Pisa, valley of the Garigliano) and which to judge from their mammalian fauna must have persisted till the end of the pliocene period, prove to us that important deposits took place in those times.

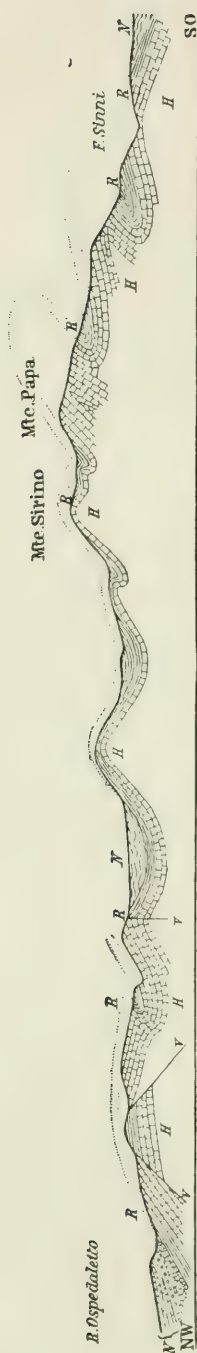
The last pliocene convulsion had indeed produced many depressions without effluents, where waters charged with lime collected and where the calcium carbonate was deposited when the waters were at rest. Gradually, most of these were drained by erosion. Newly formed volcanoes may also have barred the outflow of water in some places; this was especially the case in the Roccomontina, which diverts the Garigliano westwards from its longitudinal valley into a deeply cleft narrow bed, doubtless produced in later times by the erosive force of the stream. Until it overflowed at this point and long afterwards, the upper valley held a lake, which deposited travertine of from 120 to 150 feet in depth.

Similarly masses of *débris* from the mountains, such as we find in the plain of the Po, are only extensively present at one point of Southern Italy, viz. in the lower course of the Ofanto in Apulia. The Tavoliere di Puglia, the extensive level plain lying between the Apennines and Monte Gargano, has a quaternary covering of river sediment arranged in low terraces, consisting essentially of limestone refuse and beds of clay agreeing in composition with the mountains. The inundations of the Ofanto were much dreaded in ancient times, and at present they still annually increase the altitude of the land in the neighbourhood of the sea. In Sicily there is no evidence of diluvial glaciers. Etna had no approach to its present altitude, but was in course of formation.

Setting aside the Alps, Italy was but slightly influenced by the Ice Age. The glaciers remained on the heights or were limited to a few valleys, in contrast to Germany where the whole of the lower plain was beneath the Scandinavian ice, and even the central ranges, the Harz, the Vosges and the Black Forest, developed ice fields and glaciers of no inconsiderable extent. On the other hand, the deposition of sediment in Italy seems to have been greater then than at the present time and to have had an essential share in the working out of its existing relief.

The Tectonic form of the country came about in the following manner—

It has been already said that the ranges of the Alps and the Apennines were both formed by compression. As a result of their con-



FOLDING AND CLEAVAGE IN THE APENNINES OF SOUTHERN ITALY, NEAR LAGO NEGRO (AFTER DE LORENZO).  
H Halobian Strata; R Radiolarian Strata of the Upper Trias; N Nummulitic Limestone; V Dislocations.

struction they both naturally contain depressions and troughs, sierras and longitudinal valleys, and we saw in describing the relief that these may be distinctly recognized and traced through the whole range. The compression of the Alps took place from south-west and south towards the north resulting in ranges whose trend is east and west or north-east to south-west.

The sierras of the extreme north of the range have been displaced and made to overlie the plateau of Bavaria and Switzerland, reaching even, in the range of the Jura and the mountains of Southern Austria, as far as the older mountains of the basin of Bohemia, the Black Forest and the Vosges. But while these northern offshoots exhibit a connected zone of mesozoic sediment, such a zone is entirely wanting on the southern foot from the Maritime Alps to Lago Maggiore and appears to be sunk down underneath the plain of Lombardy. It is only to be found in the Bergamo Alps and, in some places, as the profile of the Grigna at Lake Como proves, is folded over towards the south, so that in these places the Alps have a symmetrical cross-section. This displacement continues further east with the broadening of the mesozoic strip but ceases once more beyond the valley of the Adige in the region of the Val Sugana. The Judicaria Valley is an old transverse line of cleavage, and this with the eruptive rocks of the Adamello and the Iffinger, the porphyry of Bozen and the granite of Styriamark indicates to us the old, interior tectonic edge of the Adriatic depression. The trend of the strata and of the chains between the Adige and the Isonzo also bear the stamp of this depression. Montferrat is considered to be a fragment of the tertiary offshoots of the Southern Alps which has remained at a higher level: at any rate it rises abruptly from the Piedmontese plain and chiefly consists of the eocene strata

met with in the Alpine region of pressure. The sunken masses we have mentioned explain to us the striking fact established by Austrian geometricians that the force of gravity is greater in the valley of the Po than in the mountains, and this is referred to the consideration that the sunken rocks have undergone compression, and those that had been elevated an expansion. The basalt of the Vicentin, and the trachyte of the Euganean Hills and Monti Berici forced their way up the fissure between the interrupted fragments.

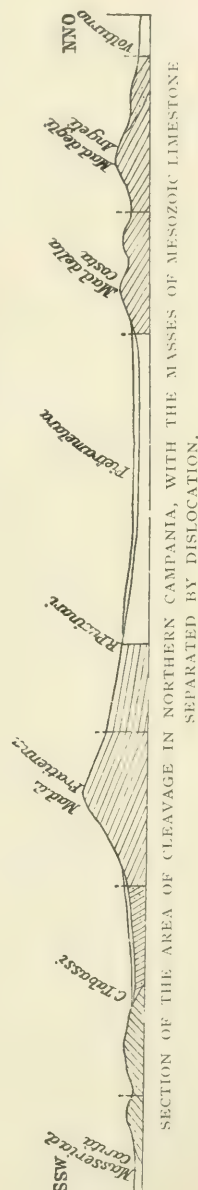
Similar conditions prevail on the inner side of the Apennines, where, instead of the marshy plain of the Po, we have the glebeland of Tuscany, the plain of Campania or, on a larger scale, the Tyrrhenian Sea, only that the disintegration is more evident, and that in the several mesozoic cliffs of Tuscany or Campania we can trace the old formation of the chain. A crowd of errant fragments are scattered over the inner chains in long narrow blocks; transverse fissures divide these again and have raised the pieces to different levels. Such masses are the Monti Lepini, the



M. Monte

## AREA OF CLEAVAGE IN NORTHERN CAMPANIA

With parallel lines of dislocation in the Apennines. These pass under the volcano of Roccamonfina and are traversed by cross fissures. The Spur of Sparanise corresponds to the rock of the Sorrentine Peninsula.

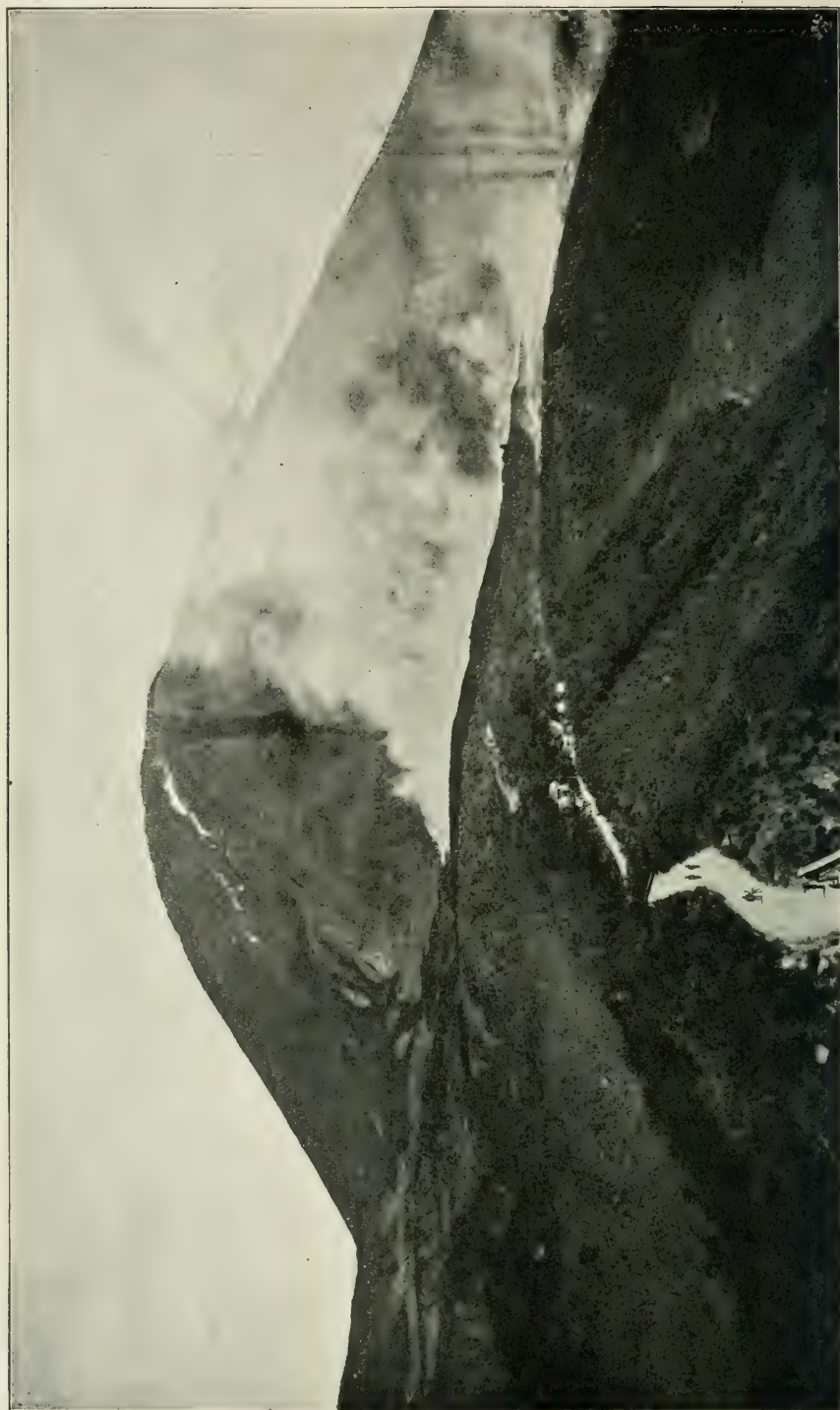


Capo Circeo, Monte Soratte, the mountains of Massa Marittima, Monte Argentario and the Apuanic Alps. Here, too, disintegration has given a passage to the subterranean molten rock, by which the Alban Mountains, Roccamonfina, Vesuvius and the Phlegræan Fields are bound together just in the places where specially powerful disruption took place. On the Gulf of Naples especially we can most clearly observe this co-operation of longitudinal and transverse fissures in the structure of the Sorrentine range. This and Capri form a narrow fragment left standing between two transverse fissures, and these again are rent by longitudinal fissures in such a manner that certain portions, such as the Piano di Sorrento, the depression of Massa Lubrense and the Bocca Piccola lie deeper than the neighbouring columns. The chain is thus a "horst," the sunken masses are "dykes." The Gulf of Naples, like that of Salerno, is a "field of depression" in geological terminology. (Compare the picture of the Piano di Sorrento in the chapter on Plants of Cultivation.)

This formation of smaller depressions begins near Pisa and reaches on the mainland as far as Rome. They become indeed more evident as soon as they get to the sea and appear as bays. Irruptions like this of secondary rocks forming successive rows at the edge of the great Tyrrhenian depression give us an explanation of the peculiar shape of the coastline in Southern Italy, Northern Sicily, and Eastern Sardinia. Etna rests on a similar depression, and the Lipari Isles are arranged along the main rift. Sardinia and Corsica are also horsts bounded by two "faults" running north and south, and divided within by parallel or transverse rifts. In the east and west sides of Sardinia, where the bottom quickly sinks to a great depth, the displacement must have been most considerable, and on both, at the Golfo di Orosei, in Monte Ferru and on the islands of the southern end, great eruptions of volcanic rocks have taken place. We may even assume similar geological causes in the African Sea from the peculiar variations in depth, and the bay formation of the sea bottom on the southern coast of Sicily, and may thus suitably interpret the occurrence of the small submarine volcanoes in that channel.

These processes, which have been going on so long in the crust of the earth, have by no means come to an end at the present time. The same forces are still at work and the ground of Italy has not yet attained perfect rest. This is shown on the one hand by the numerous earthquakes with which the country is visited, and on the other hand by the displacement of the shore on the coast, which, though often doubted, seems really to be taking place. We shall speak of both in a later chapter because we must first treat of the volcanic action in Italy.





CINDER CONE OF VESUVIUS.

## II. VOLCANIC ACTION

Volcanoes and volcanic phenomena were alluded to several times in the last chapter. With the exception of Iceland Italy has the greatest number of active volcanoes in Europe, and is consequently the classic ground for practical as well as theoretical inquiry into these mysterious proceedings, inquiries which enable us to look far down below the surface of the earth. Alex. von Humboldt, L. von Buch, Sartorius von Waltershausen have worked at Vesuvius and Etna and have gained much knowledge and enunciated many laws which are applicable also to Germany. Even for the unlearned, Vesuvius, easy to reach and to ascend to the summit, is one of the principal charms of a sojourn at Naples. Many hundred times has the mountain with its regular and yet characteristic form, with its charming colours and changing lights served as a subject for the painter and has thus become intellectually the property of all educated people. Etna, the elder brother of Vesuvius, is similarly well known, and its glorious pyramid has been carried far and wide in views of Taormina, and yet there would be no place for the two in this chorography were not the volcanic action of the greatest significance for the whole country. For, in the first place, we find traces of this action from the border of the Alps to the north coast of Africa, and secondly, they supplied that volcanic tufa, the material to which Italy is indebted for its inexhaustible fertility. Unfortunately with this gift from underground there are bound up unavoidable plagues, such as eruptions and earthquakes, though the injury they do to property and life is far outweighed by the advantages they confer. Finally, it is to this volcanic action that we owe the possibility of beholding ancient life down to the smallest details, for the cinder-covered ruins, of Pompeii, Herculaneum and Stabiae speak to us more clearly and more impressively than any books and take us back at a bound from the twentieth century to the first.

Italy possesses an imposing number of volcanoes, active, extinct and half dismantled, or even nearly obliterated. They may be enumerated here once more, beginning from the north:—

The Basaltic castings of the Vicentine.

The Monti Berici.

The Euganean Hills, with the ruins of the volcano of Venda.

Trachyte masses on Monte Catini and Roccastrada in Tuscany.

Monte Amiata.

Lago di Bolsena.

The Cimio Mountains with Lago di Vico.

The District of Lago di Bracciano.

The Alban Mountains.

A series of small volcanic cones in the valley of the Sacco, east of the Lepini Mountains.

Roccamonfina, with the central peak of Monte Croce.  
 The Phlegræan Fields with Procida and Ischia (Monte Epomeo).  
 Vesuvius.  
 The Ponza Isles.  
 The Lipari Isles.  
 Monte Vulture in the Basilicata.  
 Etna.  
 Basalt Streams of Monte Erei.  
 Pantelleria.  
 Submarine Volcano of the Island of Ferdinandea or Julia.  
 Monte Ferru in Sardinia.

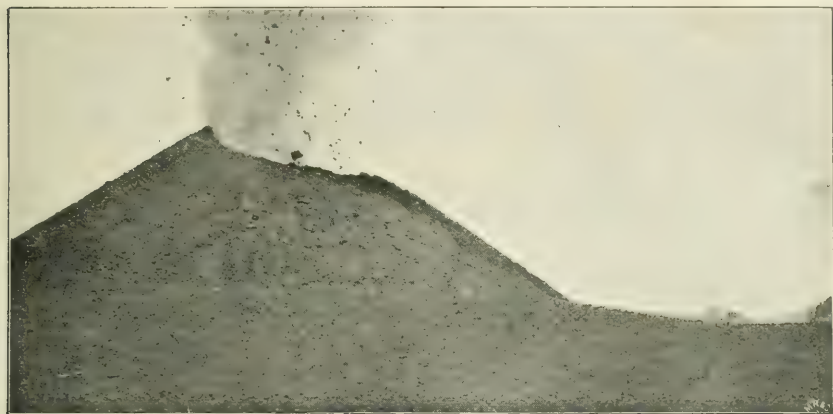


ERUPTION OF VESUVIUS IN 1872.

Taken from the Great Mole in Naples. The column rising from the crater, and composed of vast clouds of steam, is four or five times as high as the mountain. The smaller masses of steam at the side come from the flowing lava.

Besides Vesuvius and Etna there are to-day in full activity the Phlegræan Fields, the Lipari Isles (Stromboli and Vulcano), Pantelleria and for the nonce the island of Julia. All others are extinct and only bear witness to the effective force they once possessed by their rocks, their shape and their mineral springs. The basaltic ejections of the Vicentine and of the plateau of Mineo belong to the tertiaries as well as the eruptive rocks of Monte Venda and Monte Amiata, both of which can only be designated as volcanic ruins, as the atmosphere which has been at its erosive work for thousands of years has laid bare the nucleus of lava so long buried deep beneath the rubble.

The fundamental element of every volcanic eruption is the flow of liquid rock which rises from deep down below ground through fissures, and which when it flows out over the surface is designated lava. In the crust of the earth it meets with trickling waters and takes up a good deal of this, by which on the one hand the melting is facilitated and on the other the mechanical force of the fluid rock is increased. Arrived at or near the surface the superheated steam gives rise to shocks of earthquake terminating in an explosion ; finally the lava overflows, considerable masses of it being disintegrated into the form of *Rapilli*,<sup>1</sup> sand and ashes. The escaping steam rises in a



CRATER ON THE SUMMIT OF VESUVIUS IN JULY, 1895.  
With a small excentric eruptive cone and ejected scoria.

pillar over the place of the eruption ; it then slowly broadens out, and floats away horizontally after it has lost its heat. Thus there arises a similarity to a pine tree, so that for shortness it is called a smoke-pine, or ash-pine. If wind prevails aloft the end is drawn out like a banner, an appearance generally exhibited by Vesuvius. Under a violent wind the smoke may even be driven to the foot of the mountain or to the sea. The smoke-pine or ash-pine of a great eruption rises to the height of many thousand yards, surpassing the height of Vesuvius three or four times. Black in colour and impenetrable to the sight, it may veil the neighbourhood in complete night during the day, as Pliny has described in full concerning the eruption of 79 A.D. The air is then brightened only by the lightning resulting from the condensation of the steam, and its thunder mingles with the roaring and

<sup>1</sup> Rapilli are the small fragments of slag on Vesuvius. The word is taken from the Neapolitan dialect in which *l* and *r* often replace one another, and means pebbles (*lapilli*).

cracking of the mountain, from which, amid continual explosions, new dark clouds of steam are constantly being set free. The falling ashes give rise to the showers of ashes and mud that cover the ground encircling the volcano, and essentially alter its appearance, lying as it does to the depth of some yards. It was by ashes of this kind, mingled with pieces of pumice-stone of the size of hazel nuts, that Pompeii was buried; it must have been imbedded to the highest pinnacles of the houses, for the thickness of this layer amounts to nearly 40 feet. The dust and sand are carried a long way by the wind. In 1631, for example, the ashes from Vesuvius were borne as far as Constantinople, while the Apennines round Vesuvius and the Nebrodes near Etna are plentifully besprinkled with the débris of pulverized lava. The Pompeian pumice-stone can be traced as far as Beneventum in the east, Monte Albarno in the south and Capri in the west, while near Avellino it forms extensive metamorphic layers of red loam produced by volcanic ashes, 18 inches deep.

The eruption generally reaches its culminating point with the ejection of one or more lava streams, which break out sometimes at the top of the mountain, sometimes lower down. The mightier streams in Italy all belong to those bursting from the flanks of the volcano, and only the smaller ones come from the summit. This is due to the fact that the cones constructed of loose rapilli and ashes are not able to offer resistance to the pressure of the lava rising from the interior and to the exploding blasts of steam, but split asunder along the line of least cohesion and allow the liquid rock to issue by the new cleavage. This quickly deepens the rent lower down, so that the lava bursts forth near the district of the new cones and is ejected over it in tongues of fire. Several large streams of this kind were produced by Vesuvius in 79 A.D., from under one of which the ruins of Herculaneum have been uncovered. In 1631 two large streams flowed out towards Portici and Torre del Greco, reached the sea, forced their way into it and created the promontory of Granatello. This phenomenon was repeated in 1794; also in 1805 and 1806. In 1861 an ejection of lava took place right above Torre del Greco; its fissures ran deep into the mountain and gave rise to fourteen small cones, but came to a stop in time. The last violent eruption was in 1872, and, like those of 1855 and 1858, it produced two streams reaching down towards Naples and into the cultivated land. The places specially affected by their devastation were Massa di Somma and San Sebastiano. These lava streams of Vesuvius, however, are unimportant compared with those of Etna, where in recent times there has been a great eruption every eight years on an average. The lava of Etna has always found an exit on the side of the main cone and has pro-



LAVA FIELDS OF VESUVIUS.



duced small volcanoes on its flanks, active only for a short time, of which Sartorius von Waltershausen counted nearly three hundred. The inhabitants call them "Figli dell' Etna," and as some of them are several hundred yards in height the principal mountain gives to one ascending it the impression of a whole range and not of a regular cone like Vesuvius, on which these parasitical elevations, though they do exist (Camadoli della Torre), are only of small height. Masses of lava of 75,000,000 to 150,000,000 cubic feet in volume are by no means rare on Etna. The largest stream which has issued from the mountain in historic times is that of 1669 which originated near Nicolosi and reached the sea in the neighbourhood of the town of Catania.

The volcanic cone is constructed of fallen ashes, rapilli and scorixæ,



VIEW OF THE LATERAL CONES OF ETNA FROM ABOVE.

of lava and the product of its subsequent disintegration, and of slabs of rock (radiating passages) forced into the rents and then solidified; it has a gentle slope on its outward portions increasing in gradient higher up, a circular or elliptical base and a symmetrical section. At the summit lies the crater, or funnel-shaped caldron due to the explosions, and from this issues hot steam in time of quiescence, while during an eruption the bottom is burst open and the crater is filled with glowing lava. The topmost section, a heap of loose material, is called the eruption-cone. At the commencement of a new period of activity, especially after a lengthened quiescence, this point falls in, giving rise to a broad crater from the bottom of which a new mountain arises surrounded by a circular valley. In the Alban Mountains there are two ring systems of this kind, one within another,

and in the midst of the inner and higher one lies Monte Pila, the remains of the central eruption cone, marking the locality of the former channel. Roccamonfina possesses one similar ring, from the middle of which ascends Monte Croce ; on Vesuvius, too, there is only a single ring, Monte Somma, but the upper portion of this has been destroyed on the southern side. We gather from the writings of the ancients and from mural paintings in Pompeii that before 79 the circle was still complete, that the mountain was covered with dense forests of oak,<sup>1</sup> and that it was not until the terrible eruption that the destruction of the southern rim of the crater took place, when it was accompanied by vast landslips. Apparently it is due to this that parts of Herculaneum were not buried in a stream of lava but under the débris of older rocks proceeding from eruptions of Monte Somma. The elevated crescent-shaped valley bounded by the steep crater walls of Monte Somma, and the existing cone of Vesuvius is called Atrio di Cavallo, and formations of this kind are thus called atria for brevity. There is no analagous contour on Etna, but instead of it a modification of the flanks has taken place, giving rise to the barren Valle del Bove or Valle del Bue, accompanied by steep wildly torn chains, and making a section to which we owe valuable material for the history of the volcano.

Vesuvius and Etna are distinguished by the fact that their eruptions are always repeated at the same points, or at any rate within a space of very narrow limits. The conditions are quite different in the Phlegræan Fields, in the district of Lago di Bracciano, and at the foot of the Monti Lepini. It is true that the surface is pierced in many places, but almost always at a different spot, and thus many small craters have come into existence side by side, or sometimes one upon another. It is not without reason that these Phlegræan Fields have been compared to landscapes in the moon as similar caldrons and funnels occur on the surface of our satellite, crowded together and at times mutually destroying one another. Each one, as is shown by the coming into existence of the Monte Nuovo near Pozzuoli in 1538, owes its upheaval to a violent eruption, never occurring again at the same point. In the Phlegræan Fields, omitting Ischia, there are twenty such fragments of rings or craters ; at the Lago di Bracciano over forty have been counted. Volcanic regions of this kind are characterised by small height with wide extent of surface ; their eruptions are accompanied by a quantity of steam at high pressure, which pulverises the molten rock and prevents any great flow of lava. Although a second eruption seldom takes place in these craters yet a small one

<sup>1</sup> Strabo describes Vesuvius as a conical mountain with a flat top, thickly clothed with forests below, but bare and unproductive above

consisting of the ejection of hot water, of steam impregnated with sulphuric or muriatic acid, may last for a long time.

We then call them half extinct, or in the Solfatara state, because the Solfatara, a crater of this kind, hard by Pozzuoli, has presented these appearances, and has been in a similar condition, for nearly 2,000 years. Other examples are the Tolfa in the Roman region, and the island of Lipari.

The volcanic caldron and funnel often have no effluent for rain

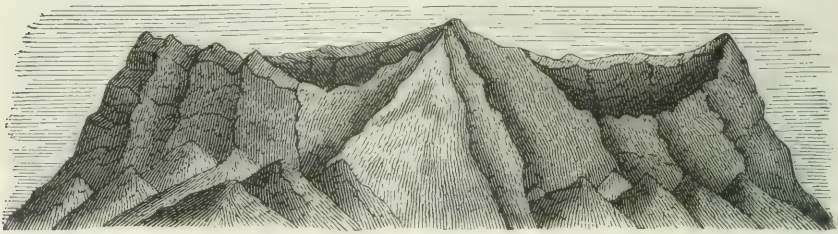


THE SOLFATARA, NEAR POZZUOLI.

With the flat bottom of the crater, coloured white by the disintegrated rock steep crater walls and exhalations of steam at the foot of the latter in the background of the illustration.

water. This has then to trickle away, but the fine channels soon get stopped up by particles of clay, and it then collects into a pond or lake. There are many such lakes on the Eifel, where they bear the name of "maare" taken from Italian. The Lago d' Averno and Lago d' Agnano are enclosed in craters of the Phlegræan Fields, the last being artificially drained. The Lago di Baccano, Lago di Martignano and Lago di Vico are similar *maare* near Rome. Lago di Bracciano and Lago di Bolsena, as well as the Alban and Nemi lakes in the Alban Mountains, have hitherto been counted with them. But recently the view has been held that these great depressions were

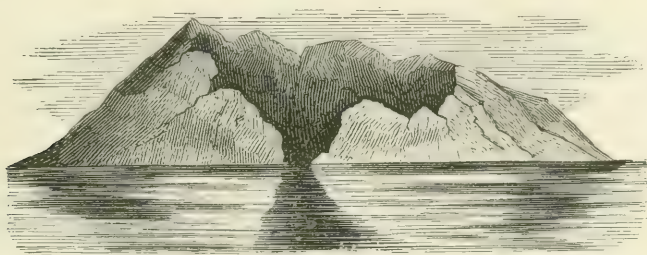
formed by the falling in of the lava of the crust of the earth after the close of the volcanic eruptions, and that masses that were above the surface must have fallen down into these cavities. This would seem very probable in the case of the Lago di Bracciano and the Bolsena Lake, but the proof in that of Lake Nemi is not yet established. Numerous *maare* have gradually dried up and degenerated into turf, or have gained lateral effluents. Even the Solfatara was once upon a time a shallow lake, and it still occasionally fills to some extent after a long period of rain, and then gives off a faint effluvium of sulphurous gases. If an area containing craters of this kind is near the sea coast circular harbours almost enclosed are developed, or bays of regular shape shut in by steep walls. We see this exemplified between Pozzuoli and Ischia in the remarkable shapes of the Bay of Baja, Porto di Miseno, Porto di Procida, and the harbour of the Island of Nisida, and similarly in the Southern Hemisphere on the isthmus of Auckland in New Zealand.



THE VOLCANIC ISLAND OF FERDINANDEA (AFTER FUCHS).

Italy has volcanoes in the sea as well as those on the mainland. It has been established by taking soundings that cone-shaped shallows (*secche*) are found at several points under the water of the Gulf of Naples, which can hardly be regarded otherwise than as a continuation of the volcanic upland lying on the coast, and which apparently contain many rocks of which the points of eruption are unknown on the land. During the time of eruption these submarine volcanoes often build up island cones of *scoriæ* and pumice from the bottom of the sea to the surface; they are, however, seldom able long to withstand the waves and disappear quickly, remaining only as reefs in the deep sea. In 1832 the Island of Ferdinandea or Julia arose in this way in the Sicilian Sea, and eyewitnesses have drawn sketches of its smoking crater. The island was 250 feet high, and measured 800 feet in diameter, the circumference being 2,000 feet. After three months it had diminished in height, and its summit was in the surface of the sea, and two months later there was a depth of 24 fathoms where it had

been. In 1891 there was a similar submarine eruption near Pantelleria, but it did not proceed so far as to form an island. Between 1888 and 1892 there must have been an issue of hot water or lava at the bottom of the sea near Lipari, for the cable to this island was rent asunder, and the indiarubber casing was melted and stuck over with scoriæ. Volcanic islands have only been built up where the upheaval rock was of a kind that the sea could not master, either owing to their enormous mass and the frequency of the eruptions, or when they consisted of lava and streams of water. This we can see before our eyes in the Lipari Isles, the Ponza Isles and Pantelleria. These stand on a broad plinth and their pinnacles stand out above the sea. The Lipari Isles, if placed on the land, would considerably exceed Vesuvius in height, as they rise from a depth of 3,000 feet below to a height of 3,000



THE VOLCANIC ISLAND OF FERDINANDEA THREE MONTHS LATER (AFTER FUCHS).

feet above the surface of the sea. (Lipari 1,978 feet, Salina 3,156 feet, Stromboli 3,038 feet, Filicuri 2,583 feet).

As soon as the impetus from the interior of the earth has ceased the atmosphere commences its work of wearing away and levelling the mountains. The loose rapilli of the cinder cone are washed down by the rain, the projecting lava banks are eroded and rinsed out by the brooks till they too fall to pieces, and finally the remains of the former lava column, fixed in the funnel and hardened there, is exposed. Thus the crater is scored till crater and eruption cone disappear, and only the firm inner scaffolding remains with the lava which has become fixed in radiating fissures. Monte Amiata, and Monte Venda in the Euganean Hills, Monte Ferru and the numerous trachyte and liparite hilltops in Tuscany and Sardinia are examples in point. Many date back their original formation to the Tertiary period and were partially dismantled by the waves of the sea in the time of the pliocene depression, serving thus to help fill up the sea with their loose masses. In this way the places of eruption of the Vicentine basalt and the covering of South Eastern Sicily were obliterated, and only the harder lava

streams imbedded in later sediment give us information as to the volcanic forces during this phase.

The question has been much discussed as to whether the Italian volcanoes have any interior connexion one with another. This is the case actually only in a very small degree, as most of them have independent geological situations on separate areas of depression and fractures, as well as differences of age. The Phlegræan Fields and Vesuvius, which are scarcely  $12\frac{1}{2}$  miles apart, are entirely independent of one another, their rocks and gaseous products being quite different. The Solfatara experiences no essential increase or diminution in its effluvia from all the paroxysms of Vesuvius, and the eruptions of Ischia in 1302, and near Pozzuoli in 1538 did not affect Vesuvius. It is only between Etna and Volcano that of late years a certain connexion seems to be exhibited. These two commenced their activity about the same time in 1889 and may be situated at the ends of the same fissure which passes under the Nebrodes. But this connexion can only have been set up during the last ten years, as before that Volcano remained passive during the eruptions of Etna.

In regard to the nature of the rocks of which they are composed the Italian lavas are very different. Some, like the liparite of Volcano, Lipari and Southern Sardinia, or the Pantellerite of Pantelleria, belong to the acid rocks, abounding in silica, of which they contain 70 per cent., and resembling granite in mineral matter and chemical composition. Others, like a great part of the Tuscan rocks at Monte Amiata, Monte Catini, Tolfa, the Cimio Mountains, and like those of Monte Venda and the Phlegræan Fields are trachyte, sometimes with only felspar, sometimes with a certain quantity of leucite accompanied with hornblende, mica and augite, on the whole poorer in silica and richer in calcareous earth and alkalies than the first group. Then in the lavas of Vesuvius and Etna there occur basic rocks which have preserved the same composition on the whole in all phases of the two volcanoes, besides the lava-streams of the Alban Mountains, of Lago di Bracciano and of Roccamonfina, all rich in leucite. These last have been called leucitite and lucititephrite. The volcanoes of Monte Vulture, the Vicentine, Lago di Bolsena and Lago di Vico are characterised by basalt and basanite holding nepheline or leucite. All these volcanic rocks contain potash and soda in more or less high percentage, besides phosphoric acid in the needles of apatite, and upon these substances depends the exuberant fertility displayed by regions covered by them after the crumbling of the crust of scoria and after the somewhat advanced disintegration of the masses on the surface.

Although a stream of lava lies for a long time barren and black,





VIEW OF SORRENTO, WITH THE ORANGE GARDENS.

and, as in the case of the stream of 1872, scarcely allows a scanty covering of grey lichen to appear on it at the end of thirty years, yet after 100 years it furnishes the most productive soil for the cultivation of wine and garden produce, as it requires no mineral manure but supplies of itself all the inorganic salts beneficial to the growth of plants from the slow disintegration of felspar, leucite, nepheline and apatite. If the material is pulverised by the force of the eruption or is broken up small by water, whether rain or the breakers of the sea, the vegetation takes possession more quickly of the soil thus prepared, and after a bad eruption it awakes to a new and powerful development through the shower of ashes. The salts in these ashes work on the plants like the artificial manure used in gardening, or in manuring with saltpetre and cenite.

Masses of lava thus blown to pieces, as we said above, have fallen round the volcano over a wide circumference. It is called volcanic tufa, and we have seen that it covers the whole Roman Campagna from Monte Amiata to the Volscian Mountains, the whole of Campania Felix, and the environs of Etna and Vesuvius. These are at the present time the most luxuriant and fruitful portions of Italy, and if the Roman Campagna is an apparent exception, this is due to other causes.

The clouds of ashes were deposited to a greater distance on the summits of the Apennines, and their dust was gradually washed down the slopes into the valleys, heaping up vast deposits at the foot of the heights or collecting on the higher levels. The terrestrial and submarine volcanoes of the Phlegrean Fields especially have shed tufa over Campania and the mountains bounding it, so that there is as much as 60 feet of fertile soil in the channel of the Irno and the valley of the Sabato, near Capua and Beneventum, above the valley bottoms formerly filled with barren detritus of limestone. The eruptions of Monte Somma and Vesuvius restored fertility to the impoverished strata higher up and Roccamonfina performed the same office for the ranges contiguous to Campania on the north. Thus it has come about that the bare limestone cliffs are grown over with pleasant vineyards and higher up with beautiful beech forests, while the valleys, unlike the barren stony channels in the Eastern Apennines, are accompanied by a green band of varied cultivation. The wonderful orange gardens of Sorrento, and the vineyards of Middle Campania grow and flourish on similar tufa, and by their luxuriance and plentiful produce have given to this stretch of land the name of "felix." In short it is difficult to observe a sharper contrast than in passing up the valley of the Ofanto over the dry chain of the Apennines to the volcanic Monte Vulture, covered with cultivation and verdure. Soil of this

kind is adapted above all to vine culture, so that it is a true saying, though perhaps somewhat trite, that the wine grown there has acquired something of the fire of the volcano.

With the subject of volcanic action it was usual in earlier times to treat of earthquakes as if the two made an inseparable whole. Indeed the theory has been set up that active volcanoes are ventilating shafts, in which the forces of the earth which would otherwise have generated earthquakes have made for themselves a less injurious outlet. At present another view prevails—one which traces the great majority of earthquakes to tectonic action, to the

giving way of tension at the formation of new convolutions, to movements along the lines of cleavage and to the formation of new fissures. Only a small part of them are recognized as purely volcanic in their nature, and a third and still smaller part are ascribed to the collapse of cavities near the surface. What cause to assume in any particular case often presents a difficulty which can only be solved after careful examination of all the geological conditions. At any rate the theory cited above contains the



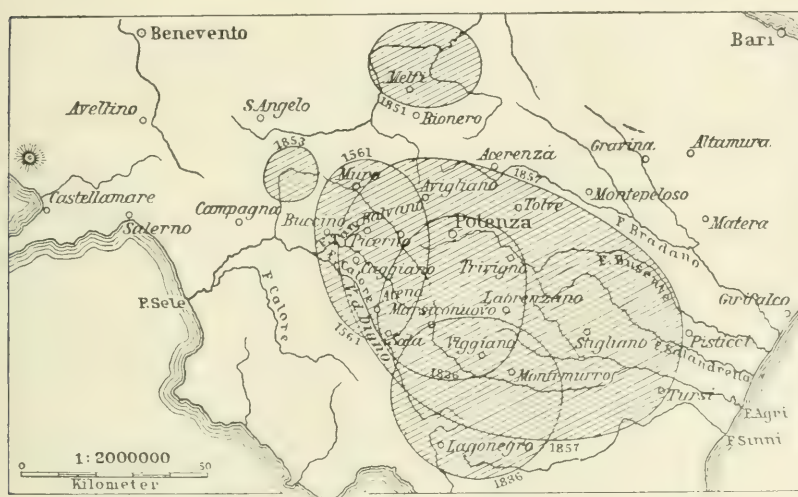
THE DISTRICT OF THE MONTI EREI AFFECTED BY THE EARTHQUAKE OF APRIL 13, 1895 (AFTER ARCIDIACONO), AS AN EXAMPLE OF VOLCANIC SHOCKS.

correct observation that earthquakes in the neighbourhood of a volcano usually precede an eruption and cease when the flow of lava reaches its height.

Whatever the causes of earthquakes may be, we might, in a district so broken up as Italy is with its wealth of old and new beds of lava, with its extensive masses of limestone, always prone to the formation of caverns, count upon numerous and violent disturbances of the earth, and Italy, as is generally known, is one of the countries of Europe most visited by earthquakes, being only surpassed in this respect by the Balkan peninsula. Since the invention and erection of the sensitive microseismometer, by which the most delicate oscillations and the slightest tremblings of the earth can be measured, it does not overshoot

the mark to describe Italy as really in a state of constant motion. This amounts sometimes to those devastating catastrophes by which Calabria was visited in 1783, Liguria in 1887, Ischia in 1881 and 1883; and the violence of which is evidenced by the ruins of Casamicciola, now covered with a green mantle of ivy, but still sad to look at.

The earthquakes due to volcanoes are usually bound to a channel of eruption, at or near the end of which they have a surface centre whence the shocks radiate, and where they are most violent. Of this kind are all the earthquakes of the Alban Mountains, very many of those near Rome, those of Portici Risina and Torre del Greco at Vesuvius and the shocks which take place in Catania and on the



EARTHQUAKE DISTRICT OF THE BASILICATA (AFTER MERCALLI).

basaltic plateau of Monte Erei in Sicily. Similarly the violent earthquakes which convulsed Melfi and a number of places in the Basilicata in 1851, took their origin on Monte Vulture. It may be imagined that the molten rock made an attempt to re-open the choked channel, and that its gases brought on the shock. This is tolerably certain in the case of the earthquakes of Ischia in 1828, 1858, 1881 and 1883, which may be looked upon in their entirety as premonitory symptoms of an eruption, considering that the eruptions of Monte Nuovo in 1538 and of Vesuvius in 79 A.D. were preceded by long-continued convulsions of the ground in Campania, constantly increasing in intensity. Volcanic earthquakes generally cease for a time after the issue of the lava or become considerably weaker, so that the inhabitants of the country near Vesuvius hail the first appearance of the effluent masses with

some joy, as a sign that the damage will now be localised and that the weird, and in some places dangerous, oscillations are about to subside.

Quite different is the case with tectonic earthquakes proper. In these the shocks often go on for years ; we have to do not with single blows but with a series of shocks which end or commence with one of extra violence and often extend over three or four years. The earthquake in the Pays de Vaud in the fifties, that of Agram in the eighties, and the earthquakes of Laibach in recent times were motions of this kind with slow oscillations. By these certain subterranean tensions are released. These likewise lead to rents and continue until a new state of equilibrium is set up. These shocks are connected with districts of cleavage and pressure, and appear within these, now in one place now in another, often along definite lines with more extensive surface centres, and are generally propagated with such speed that the curves of simultaneous disturbances are often ellipses of quite different axes. We meet these earthquakes in Liguria, in the Romagna, at the edge of the Alps near Verona, in the Capitanata, in the Basilicata and in Western Sicily. We must also count among them the earthquake round the Gulf of Genoa in 1887, the small shocks in the districts of Modena and Parma (1802, 1824, 1828, 1894), of Rimini, 1672, in Tuscany, 1227, 1292, 1352, 1414, 1796, 1856, the earthquake at Monte Gargano 1893, besides, above all, the destructive disturbance in Southern Italy in 1857. This was doubtless attached to the lines of cleavage which accompany the deep valley of Valle di Diano near Sala Consilina, and specially developed itself in the fissures of that region. At that time not less than 10,000 people were killed or wounded and fifty villages were laid waste. The shock must indeed have been very violent. The population, however, with their architecture, which is often quite pitiful, must bear the chief blame for this terrible calamity, and this is the case with all such devastations in Italy. The walls of the houses are constructed of round stones such as may be picked on the field or the mountain side, united by worthless mortar ; the roofs, on account of the scarcity of wood, are arched over without beams, so that on the smallest dislocation of the sides the whole roof of the house falls in and the inhabitants are buried under its stones, often without a chance of escape. Thus at any violent shock every one hurries into the streets and open places, which are unfortunately too narrow to protect the people from the falling ruins, and then if the disturbance continues they often remain for days under tents or barrels before venturing to return into their houses. But safety is not always to be found even out of doors ; in the earthquake in Calabria in 1783 quite a number of people were buried in fissures that opened in the

ground, while others who had fled to the sea near Scilla were caught by the seismic wave and carried out to sea.

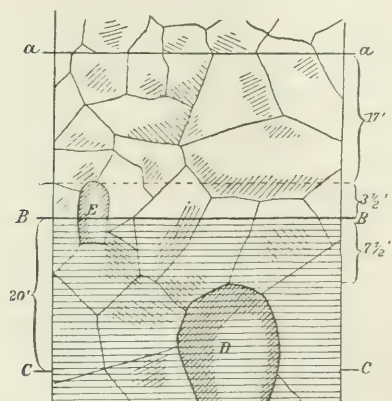
After the evil experiences of the fifties a commencement was made, especially in Italy, to establish stations for the accurate observation of earthquakes by means of seismometers, tromometers and latterly of microseismometers. At present these form a network over the whole country from Verona to Mineo, the best known being those of Rome, Rocca di Papa in the Alban Mountains, Vesuvius, Ischia, Catania and Mineo; lighthouse-keepers and schools have received self-registering apparatus and report their observations to the central station in Rome (*Ufficio centrale meteorologico e geodinamico*). Useful as these stations have proved to science by their rich and accurate material, they have not yet succeeded in accomplishing the principal thing, the prediction of earthquakes so as to warn the population. They have, however, essentially assisted in calming the people after an earthquake, that is to say by announcing in the newspapers that the apparatus indicates a diminution of intensity.

With volcanoes and earthquakes it has been usual to associate the rise and fall attributed to the sea level on the coasts. The portion which has been best examined is the Neapolitan coast, where measurements have been taken since the eighteenth century, a mass of information being in existence about the sudden alterations of the shore. At the time of the eruption of Monte Nuovo in 1538 the sea is said to have fallen back permanently 600 braccia (some 690 feet), and to have thus left dry what is the present beach. It is a fact that a depression must have taken place there since the Roman times, as the columns of the Temple of Serapis at Pozzuoli have been bored by seashells (*Lithodomus dactylus*). Three of the cipolin marble columns which supported the vestibule are yet standing and exhibit these borings on a zone some 10 feet broad, from which it is to be concluded that there was a sinking of some 20 feet. The attempt has been repeatedly made to show that this reasoning is false, and the opinion has been expressed that the place had perhaps been a fishpond in which these sea-shells had made a settlement. This explanation is all the more untenable as the arrangement of the adjacent buildings, the channels for conducting water which still exist, and other things, lead us rather to conjecture that this so-called temple was really a bathing establishment, in which use was made of the hot springs which still rise there. Geologically there is no reason to reject this theory of elevation and subsidence, as the Phlegæan Fields form in a measure the crater bottom of a larger volcano indicated by the hills of Camaldoli, and at such points variations of level have also been observed. The same holds of the shiftings of the shore at Nisida, and near Baïæ. It is said to be certain

that slight upward movements have taken place at the foot of Vesuvius, though they do not amount to many inches. The conclusions, founded upon borings, as to elevations at Capri, the mountains near Gaeta and Cape Circe, are in no way sure, for these shore marks may date from earlier pliocene times and they are to be found in the Apennines at a height of 3,000 feet. We need not here consider the changes in the shore produced by floods, as for example in the Campagna of Rome, at the mouths of the Sele and Volturno and on the promontories of Orbetello and Grosseto, although the pushing forward of the land makes on the unlearned the impression of an elevation. Near Pompeii, which is two miles from the sea, anchors have been found, and a quantity of fishing tackle, leading to the conclusion that the town was a harbour or at least situated close to the sea shore. Changes certainly did go on there, but principally owing to the alluvium of the Sarno and the eruption of 79. Considering that Pompeii was completely covered by a mass of cinders 30 feet thick, the shallow bay in the neighbourhood

of the town must also have been filled up to a considerable extent, and finally must have been quite choked by the action of the river.

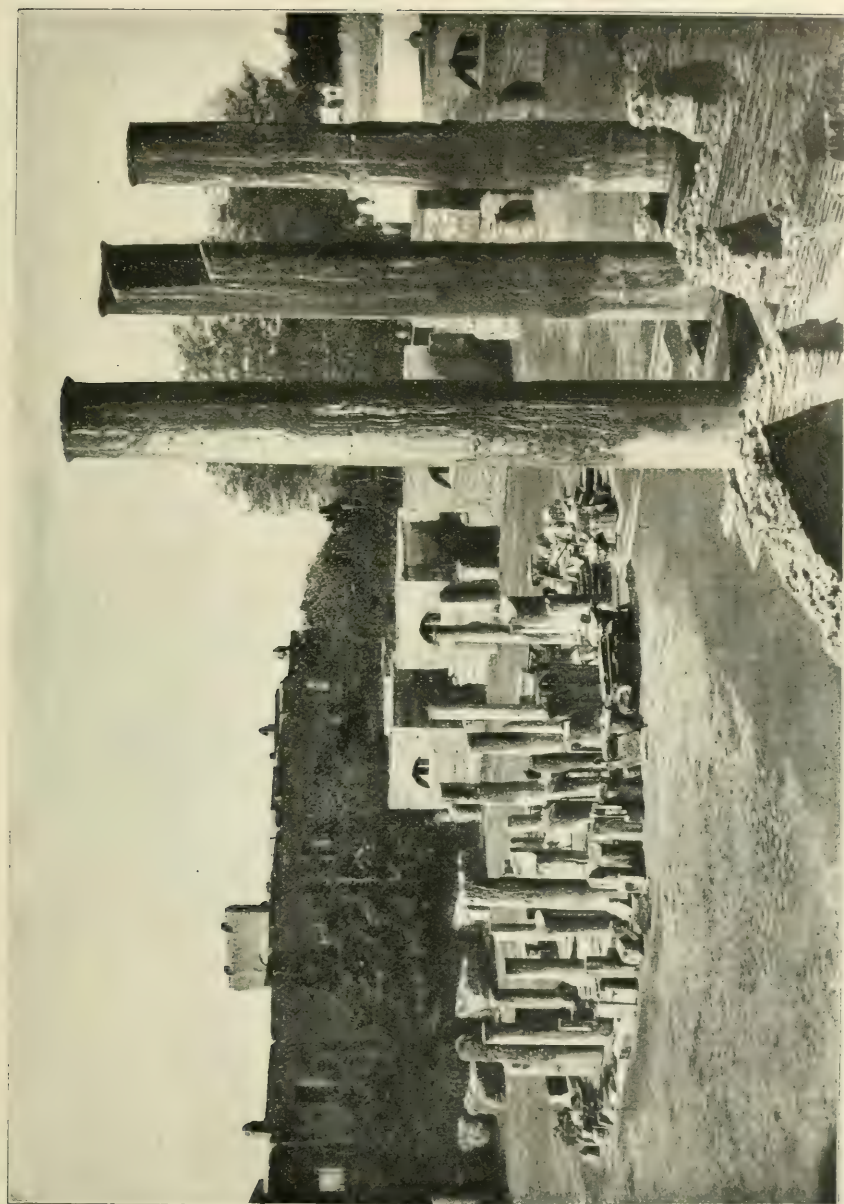
On the other hand Capri is said to have sunk. This conclusion is arrived at from the fact that access to the Blue Grotto now takes place through what was formerly a window, the original entrance lying under water and serving as a passage for the blue light. The cavern was known to the Romans, as is proved by the masonry at the window, but no notice of the wonderful effect of colour has come down to us. So long as the sunken entrance stood partly above the water this effect could not have been produced;



ALTERATION OF LEVEL AT THE BLUE GROTTO OF CAPRI (AFTER OPPENHEIM).

*a-a* Ancient shore line.  
*B-B* Present shore line.  
*C-C* Earlier shore line at the time of Tiberius.  
*D* Large hole.  
*E* Present entrance, formerly a window.

light was wanted in the cavern, and what is now the entrance was made from a window by widening a hole or breaking away the wall. The impossibility of reaching this space until the subsidence commencing in the early Middle Ages brought the window to the sea-level explains the complete oblivion on the part of the inhabitants of the island, so that the grotto had to be re-discovered by Kopisch in 1822. Capri is a lump split up and separated by several lines of cleavage, and may very well possess a slow motion of its own ;



REPUTED TEMPLE OF SERAPIS AT POZZUOLI.



in the same way various other fragments along the coast might be found to be elevated or depressed. Tectonic earthquakes indeed give us the clearest indication that the formation of mountains on the Apennine peninsula did not happen to a land in a state of quiescence, so the apparently contradictory observations which point, here to an elevation, there to a subsidence, are perhaps quite correct. The course of this process, however, is so slow that in a hundred years we might hardly have accurate figures for the several portions of the coast.

The transformation of sea into land and the diminution of depth



MACALUBA. MUD VOLCANO NEAR GIRGENTI, WITH A SMALL OUTFLOW BETWEEN THE TWO CONES.

of the sea near the coast has also been ascertained, after comparison with statements that have come down to us from antiquity, to have taken place on the western side of Sicily, where the old Phœnician harbours are for the most part silted up with sand, and the five fathom line along the coast between Marsala and Trepani lies several miles out to sea. Whether this is due to alluvium or to elevation has not been yet fully determined. According to the investigations of Th. Fischer, the whole of Sicily with the exception of the south-east is in a state of secular elevation, and this is also the case with South-Eastern Corsica, Southern Sardinia, the sea shore between the Arno and the Tiber and

the district between Capri and Cape Circeo. The northern edge of the Gulf of Venice on the other hand is said to have subsided.

A further peculiarity of the country of Italy is the mud volcanoes, or *salse*. Most of these have small cones, from the top of which flow short streams of thick mud, and have nothing to do with volcanic action proper. They are generally found in places where subterranean organic matter is undergoing slow decomposition, and giving off hydrocarbons below clay or marl. The gases thus produced, mostly marsh gas and carbonic acid gas, rise through rifts in the soft overhanging rocks and raise up the wet mud so as to form an overflow or outflow. These mud volcanoes are found in the Apennines of Modena and Parma, of Florence and Beneventum, as well as in Sicily near Girgenti, and at Paterno on Mount Etna.

Only this last can be ascribed to genuine volcanic processes, as carbonic acid gas which escapes at many points at the foot of Mount Etna here forms the propelling element, and as there is said to be indications of a certain internal connexion with the volcano. The Macaluba near Girgenti are the best known of these *salse*; they apparently owe their existence to petroleum-like substances finely distributed in the gypsum beds of the later tertiaries, and are the origin of the Sicilian sulphur beds, the sulphur in the slow combustion of the bitumen at the expense of the oxygen contained in the gypsum separating itself either directly or from compounds readily decomposed by water. Similar conditions exist near Niscemi, near Palagonia in the south-west of the island, only that there the gases make their way out, not by means of mud, but by means of the water of Lake Palicao, which they cause to bubble. Lago Amsanto, near Beneventum, is a similar lake, formerly a holy place consecrated to the Mephitic deities. Here in several places there is an exhalation of evil-smelling sulphuretted hydrogen.

The streams from these mud volcanoes are mostly small, from 60 to 150 feet long, and flow down the slopes like thick pap. They consist of diluted clay with small pieces of stone and contain some amount of gypsum and sulphur salts. The mud forced up by the gases makes cones from 2 inches to 6 feet in height, with small depressions at the summit filled with salt water. From these escape gases which are often inflammable and occasionally near Macaluba in July issue with considerable violence and explosion. Only the system of mud volcanoes of Nirano in the Apennines near Modena and that of Monte Gibbio near Sassuolo afford streams of any length. It is said that in 1835 a stream 5 furlongs in length flowed from the last, and a similar flow must have taken place in ancient times, as it is mentioned by Pliny.

## CHAPTER VI

### Climate

THE climate of Italy may be described as temperate, as the winter, owing to the low latitude, is not too severe and the summer is not too hot, owing to the wide expanse of sea around. At the same time the several provinces differ greatly in climate, as might be expected in a country extending through ten degrees of latitude, with the high land of the Alps at one end and dry Africa in the neighbourhood of the other. We may divide Italy into four sections in regard to climate : 1st, Upper Italy as far as  $45^{\circ} 30'$  N. lat., with a minimum temperature of  $14^{\circ}$  F., 2nd, Central Italy to  $41^{\circ} 30'$ , the region of olive, lemon and orange trees, where the winter is seldom severe, though snow falls as a rule on the mountains, with a minimum of  $21.2^{\circ}$  F., 3rd, Lower Italy to  $39^{\circ}$  N. lat. where the lowest is  $26.6^{\circ}$  F., and 4th, Sicily, where the temperature does not fall below the freezing point.

The Apennines have a great influence on the climate, as they keep off the north and north-east winds from the parts of the country lying to the west, so that the Adriatic coasts have more severe winters and hotter summers than the Tyrrhenian. The plain of Lombardy obviously depends on the Alps in regard to its climate, and in the sharper contrast between summer and winter it is stamped with a more continental character than any other part of Italy.

Observations on the temperature, the barometer, the rainfall, and the winds have been taken in various places since the beginning of the nineteenth century, especially at the observatories, but also occasionally by private persons. They were first organized and unified in 1866 when twenty-one stations for weather observations were established and placed in regular telegraphic communication with Florence, the then capital, so that it has become possible to make forecasts of the weather. This central institution was removed to Rome in 1880 after the transference of the capital, and united with the *ufficio centrale meteorologico e geodinamico*, the number of stations being at the same time doubled.

Weather, temperature, and rainfall are dependent on the winds. In Italy the north wind coming over the Apennines is called Tramont-

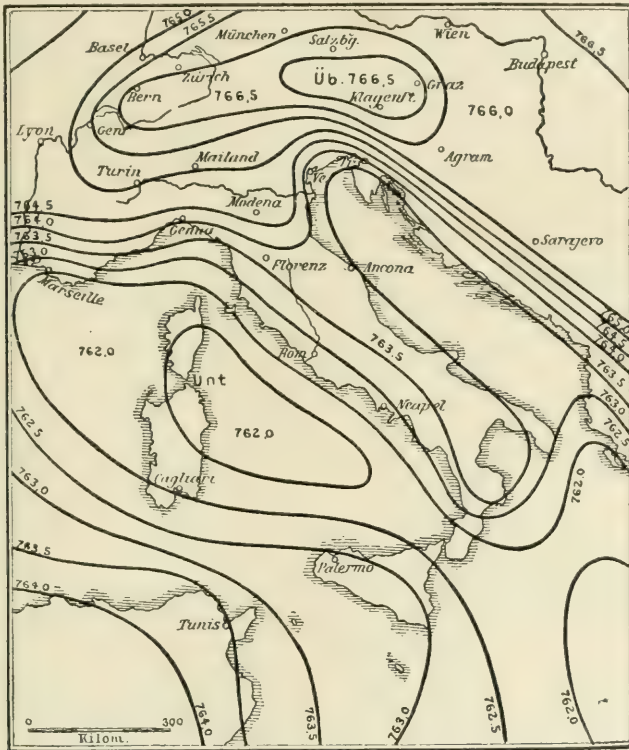
tano. It is a cold wind bringing clear dry weather, but it is not liked in Southern Italy, as the temperature falls and people begin to freeze. Even in Naples thin ice is formed by the Tramontano in clear winter nights. A north-east wind (Greco), the Bora of Dalmatia and Istria, is much dreaded; it frequently covers the Apennines with masses of snow in March or at the end of February, and this snow extends on the western slope of the range to Campania and the environs of Rome. This is unusual, as the Bora usually brings only a cold rain in these districts, and this the Italian of the south designates "neve," and finds very unpleasant. The east wind is called Levante, and is a warm current. For the south and south-east winds the designation Sirocco is used, to indicate a hot current of air, producing fatigue and sleepiness, which is much dreaded. The sky is cloudy, of a grey or yellow, or even of a red colour, the temperature is high, the force of the wind generally sufficient to raise great waves at sea. On the east coast of Sicily the Sirocco is often accompanied on the north coast by a dampness in the air, without actual rain; it seems hot and dry, and if it succeeds in reaching Naples over the Tyrrhenian Sea comes as a sultry rainy wind, producing high waves on the Gulf, and often bringing violent rain or storms. It bears a likeness in many respects to the German "föhn," especially in its varying temperature and in the fact that it often gives rise to showers of coloured dust. The Sirocco is a frequent wind, setting in every month in Sicily, and lasting for weeks in October and November, while in the north-east of the Adriatic Sea it often blows for a third of the winter.

The west winds are called Libeccio, and are the prevailing winds in Sicily (Palermo). A very peculiar phenomenon, perhaps reminding us of the "Sea-bear" of the German coasts, is the Marobbio of Sicily. It is a sudden gust of wind accompanied by an unusually violent disturbance of the sea, disappearing as quickly as it came. This may possibly be connected with local depressions of the atmosphere, which also influence the surface of the sea.

On the Ligurian coast, as in neighbouring Provence, prevails the Mistral (Maestro). This blows from the north or north-west, and is a wind of descent directed upon the Tyrrhenian Sea, which appears with great regularity at a certain time. Its principal haunt is the valley of the Rhone, but it occurs as far as the head of the Gulf of Genoa. The winds of the Lombard Lakes have special names, e.g. on Lago Maggiore the north-west wind is Mergozzo, the south-east Inverna, the east-south-east Marengo. On Lake Como the north is Tivano, the south Brevà. These are for the most part mountain currents blowing in the direction of the lakes.

The prevailing directions of the wind in Italy are south in the

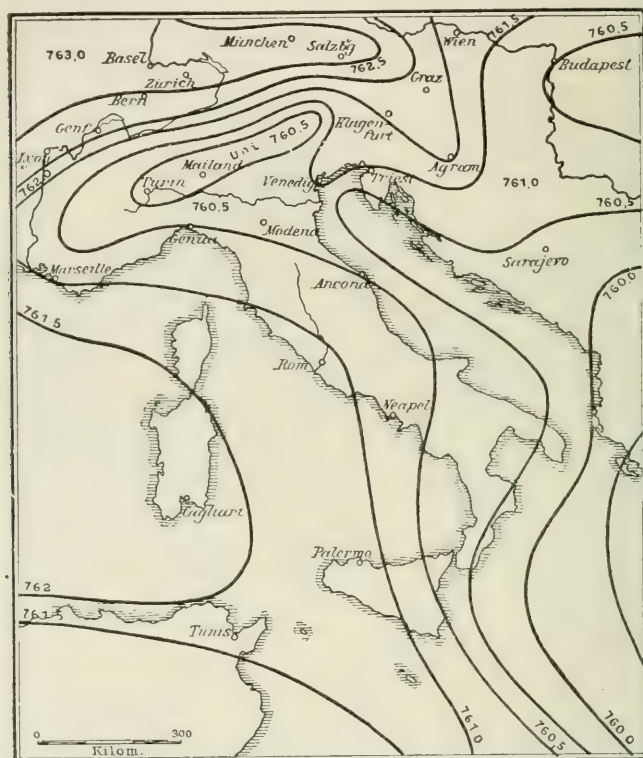
winter, north in summer, east and west in spring and autumn. Change of wind is dependent on depressions and their displacement, and indeed eddies often occur over Liguria, the Tyrrhenian and Ionian Seas, either together or close upon one another. Over the plain of Upper Italy runs an atmospheric draught passage for the Atlantic cyclones leading from Brittany over Central France and the Southern Alps, and separating into three parts at the Adriatic, one arm turning



DISTRIBUTION OF ATMOSPHERIC PRESSURE IN JANUARY  
(AFTER J. HANN).

south-east along the Apennines. Eight times a year on an average storms traverse this route with a velocity of 250 miles an hour under a mean barometric pressure of 29·4 inches. The summer is usually free from them. According to the chart of mean atmospheric pressures in the Mediterranean region given by Hann a depression located in the Ligurian Bay in December passes slowly in the spring over Corsica, Sardinia, and the Tyrrhenian Sea in a southeasterly direction towards the North African coast, reaching its maximum in July and August, and then commencing its return.

The conditions of temperature are seen in the succeeding Tables of the principal places. In general, as is natural, the mean temperature increases from north to south. The sharpest contrasts prevail in the plain of Lombardy, while the islands show a uniform climate. In Milan the average temperature in January is somewhat over  $33^{\circ}$  F., that of July  $75^{\circ}$ , about ; for Rome the number is  $45\frac{1}{2}^{\circ}$  and  $76^{\circ}$ , for Naples  $46.8^{\circ}$  and  $74.9^{\circ}$ , for Palermo  $51.6^{\circ}$  and  $76.6^{\circ}$ . In Upper Italy



DISTRIBUTION OF ATMOSPHERIC PRESSURE IN JULY (AFTER J. HANN).

the appearance of winter is like that in Central Europe ; there is frost every year in Milan, and the snow often remains on the ground for a week or more. In the same way the Apennines of Bologna are covered almost every year with such deep snow that traffic on the railways is often interrupted. On the other hand, the summer is hot in the valley of the Po ; the monthly averages for Milan in June, July, and August are nearly the same as those of Palermo, and on the Apennines a frightful drought prevails, so that the rivers are almost entirely dried up. The towns in the vicinity of the Adriatic, indeed, such as Verona and Venice, have a somewhat

warmer winter average in consequence of the influence of the sea. It is over eighty years (1819) since the lagunes were frozen. Beyond the Apennines the winter is essentially milder, and the spring sets in about the end of February.

There and in Southern Italy the tree blossoms are often injured in March by sudden returns of cold, often accompanied by deep falls of snow, and the foreigner who has been enjoying warm or even hot



CHART OF ANNUAL TEMPERATURE.

days must take extra precautions against catching cold. In March there is, as a rule, the weather of a German April, sudden alternations of rain and blue sky, and as we call April "fickle," so the Italians say "Marzo pazzo" (Mad March). April and May are warm, beautiful months in Florence and Rome, further south May is often very hot, and every one in the towns who can do so tries to escape. The heat rises in Rome during July and August to 99° and 100°, as also in

Naples, but there the sea always generates a cool and refreshing breeze towards evening. During the hot midday hours all life ceases in the streets and does not re-awaken till the cooling begins, when it goes on till late in the warm night. Radiation of heat follows the intense absorption with some rapidity, and from half an hour to an hour after sunset a feeling of cold is experienced, in spite of the high temperature of the air. This is avoided as much as possible by the inhabitants as threatening infection of fever. Spring in Sicily, where the temperature never sinks below freezing point, begins in February. The average temperature in Palermo for March is about the same as that in Naples for April, and in the hot months, especially July, occur maxima of  $104^{\circ}$ , with a mean temperature of  $77^{\circ}$  in July and August. As no rain falls during this time, all vegetation, with the exception of evergreens, dries up, for which reason the harvest takes place in June, and there is no resurrection of the vegetable world till the end of September, after the first rainfall. Malta possesses a very equable climate. Sardinia likewise shows but slight difference between the mean temperatures of summer and winter. On the whole there is a striking similarity in the summer temperatures for the whole land, as given in the tables for 1885-95, while the numbers for winter show variations of considerable extent.

Local conditions often require us to make exceptions from these general rules. The southern slope of the Alps has a milder average climate than the plain of the Po, in the narrow valleys open to the south and protected against the north wind. From this result, on the one hand, the fact that southern plants such as the lemon and the olive can winter in the open air, and on the other the use of these districts as winter resorts for invalids from the north. The same holds for the corresponding slopes of the Ligurian Apennines which, turned to the south through several degrees of longitude and lying close upon the sea, show yet more favourable conditions, the mean temperature in winter being between  $48^{\circ}$  and  $50^{\circ}$ , some  $10^{\circ}$  higher than at Milan. For the like cause Catania is warmer than Palermo, which opens northward to the sea, and on this account the summer heat in Palermo is not so unendurable as in Catania and Syracuse, while the winter temperatures are nearly the same.

## MONTHLY TEMPERATURES (FAHRENHEIT.)

	Milan	Verona	Bologna	Rome	Naples	Palermo	Catania
January . . . . .	33·20	37·26	34·88	45·51	46·67	51·64	51·44
February . . . . .	38·30	41·45	39·20	47·34	47·34	52·07	52·88
March . . . . .	45·88	49·42	46·76	51·66	50·02	54·45	56·40
April . . . . .	54·64	58·10	55·94	57·79	54·28	58·98	60·08
May . . . . .	64·08	67·54	64·94	65·25	67·16	65·55	67·28
June . . . . .	70·66	74·07	72·50	71·10	75·25	72·18	76·10
July . . . . .	74·75	79·23	77·36	76·14	74·66	76·91	62·78
August . . . . .	73·58	76·78	75·56	75·65	73·80	77·49	81·14
September . . . . .	66·47	69·33	68·00	70·07	68·76	73·36	76·28
October . . . . .	56·85	59·45	57·75	64·80	61·61	66·74	68·72
November . . . . .	47·06	46·98	45·50	53·37	53·78	59·99	59·72
December . . . . .	36·55	39·75	37·40	47·79	48·76	54·21	53·78
Annual . . . . .	55·17	58·28	56·32	60·66	59·56	63·61	65·30

	January	April	July	October	Annual
Milan . . . . .	32·9	55·8	76·5	55·9	55·0
Turin . . . . .	32·4	54·3	73·8	52·3	53·6
Alessandria . . . . .	31·5	55·2	75·5	52·9	54·1
Venice . . . . .	36·9	55·9	76·5	58·5	56·3
Modena . . . . .	34·3	56·1	76·5	56·5	55·8
Bologna . . . . .	35·6	56·7	77·9	58·5	56·8
Geneva . . . . .	46·0	57·9	76·5	63·1	60·6
Florence . . . . .	41·0	56·8	77·2	59·5	56·5

	January	April	July	October	Annual
Leghorn . . . . .	44·8	57·0	75·7	61·5	59·7
Urbino . . . . .	37·2	52·5	73·6	55·6	54·5
Ancona . . . . .	41·9	57·0	79·3	62·2	60·1
Rome . . . . .	43·1	57·0	77·8	61·3	59·5
Naples . . . . .	46·8	57·0	77·7	62·6	60·6
Lecce . . . . .	47·7	59·2	78·3	64·8	62·6
Ajaccio . . . . .	49·4	58·5	78·1	66·9	63·7
Nice . . . . .	47·1	58·1	75·0	62·6	60·3
Palermo . . . . .	51·8	59·7	77·7	67·6	64·2
Syracuse . . . . .	52·0	59·9	79·7	68·4	64·8
Trieste . . . . .	39·9	56·3	77·6	60·1	57·4
Fiume . . . . .	42·4	56·5	77·2	60·8	58·1

N.B.—It will be noticed that the Temperatures for Rome, Milan and Bologna do not quite agree, either with each other or with the text. They are probably for different sets of years.—TRANSLATOR.

## MEAN SUMMER TEMPERATURE.

	Turin	Milan	Venice	Genoa	Bologna	Florence	Ancona	Rome	Naples	Lecce	Palermo	Sassari
1885 . .	73.0	74.7	73.9	74.5	74.5	74.5	—	75.9	74.7	75.6	76.3	73.6
1886 . .	70.7	72.3	72.1	72.3	72.5	71.8	—	73.8	72.5	74.7	75.8	71.4
1887 . .	72.7	74.8	—	74.8	76.5	74.5	—	76.1	75.8	75.9	76.1	75.2
1888 . .	69.8	71.6	73.4	71.1	75.4	72.3	75.0	74.1	72.9	76.1	75.4	72.1
1889 . .	71.1	72.9	74.3	72.5	75.6	72.5	75.9	74.8	74.1	75.9	74.8	72.7
1890 . .	70.9	72.3	74.1	71.4	74.7	73.2	75.7	75.8	72.8	75.4	73.8	72.5
1891 . .	70.3	72.1	73.0	71.1	74.1	72.0	75.0	73.8	72.5	76.1	74.5	72.7
1892 . .	73.0	73.9	74.5	75.8	75.4	73.9	75.6	75.4	74.1	75.2	75.0	73.9
1893 . .	70.0	73.2	73.8	73.8	73.0	73.4	75.0	75.0	73.4	74.7	74.8	73.6
1894 . .	72.7	74.1	73.8	72.9	74.7	73.2	75.9	74.7	72.8	75.7	74.1	72.7
1895 . .	71.6	73.2	73.8	73.0	73.4	73.4	73.6	74.3	73.6	75.4	74.5	73.0

## MEAN WINTER TEMPERATURE.

	Turin	Milan	Venice	Genoa	Bologna	Florence	Ancona	Rome	Naples	Lecce	Palermo	Sassari
1885 . .	37.4	36.3	38.1	48.6	38.3	43.5	45.0	46.2	48.0	48.0	51.3	50.0
1886 . .	34.7	35.2	—	45.9	35.4	42.4	44.6	45.7	47.8	49.7	51.6	49.5
1887 . .	32.0	33.8	38.3	44.8	38.1	41.0	—	44.4	47.3	49.7	52.7	46.8
1888 . .	32.0	33.4	—	44.1	34.2	39.2	40.8	44.2	46.4	47.5	51.3	46.2
1889 . .	35.1	36.1	39.7	48.0	38.8	41.0	43.2	44.4	46.8	48.7	52.0	51.4
1890 . .	35.9	36.0	38.3	48.0	36.9	41.2	42.8	45.0	47.5	48.2	51.4	48.0
1891 . .	33.3	33.1	35.8	42.4	32.9	38.5	38.3	42.6	47.5	46.2	48.4	45.1
1892 . .	35.6	37.6	39.4	47.7	37.9	43.5	45.0	47.3	49.7	50.0	53.4	50.0
1893 . .	32.0	33.1	35.8	44.6	33.4	39.2	40.5	43.7	45.7	46.9	51.1	47.7
1894 . .	34.7	36.7	39.2	46.9	37.6	42.4	43.3	45.7	47.8	48.9	50.7	48.4
1895 . .	35.9	32.2	36.5	42.4	33.4	39.2	41.5	44.2	46.0	48.2	52.0	45.9

	Mean Maximum.	Mean Minimum.
Milan . .	93.7	14.5
Alessandria . .	94.3	12.4
Ancona . .	95.0	25.7
Rome . .	95.0	25.7
Palermo . .	103.5	32.0
Malta . .	96.1	43.0
Trieste . .	90.5	23.7
Fiume . .	91.4	24.1

The rainfall in Italy takes place for the most part in autumn and winter, so that this country belongs to the region of winter and autumn rains. The Apennines form a noteworthy boundary, for a line drawn from the summit of the Ligurian range through Pisa, Rome, Capua, Salerno, Metaponto, Otranto divides the area of the winter rain

from that of the autumnal rain lying north and east of it. In many parts of the country it practically never rains in summer : Rome has only a few days between June and September with appreciable rainfall. In Sicily we may anticipate six rainy days at Palermo, two at Catania, two at Syracuse in the summer on an average. In Malta it never really rains from March to September, but when rain does fall in Italy it takes the form of violent downpours such as are only seen in Germany during thunderstorms, and in these more water falls in a short time than in a week's rain in Germany. In the higher parts of the mountains this downfall naturally takes the form of snow. The ranges of Upper and Middle Italy are usually white with snow from November till April. Gran Sasso keeps the snow far into the summer, and it happens in some years that it is never free from snow. In the Neapolitan range the snow melts in March, but there is often a fresh covering of snow under a spell of cold. Even the Aspromonte in Calabria, the Nebrodes in Sicily, have a wintry appearance after the beginning of April. The highest point of Etna is not quite free from snow till August, which is the best time to ascend the mountain.

One of the following tables compares the amounts of rainfall in certain places, and a second gives the percentage belonging to the different seasons. From this it may be seen that in the middle of the Lombard plain (Milan) the differences are not very important. The rainfall at Milan is tolerably uniform, with a slight increase in the autumn. The dampness of the region shows itself in the fogs which occur frequently in the autumn, and are nearly as thick as in London. In Florence and Rome there is nearly the same amount of rain in autumn and winter, while the rain in summer is unimportant, the percentage in Rome being somewhat less than in Northern Tuscany, and we may lay down the rule that with the diminution of the winter rainfall from south to north that of autumn and spring increases. The country at the foot of the Alps has more plentiful rain in the early summer (May and June) and in the middle of autumn (October). The rainfall here is very large, everywhere exceeding 40 inches and reaching 5 feet at Lakes Como and Lugano, while it remains below 40 inches in the plain of the Po. The figure for Tolmezzo is unusually large (95·8 inches), while that for Lecce is very small (21·7), reminding us of the state of things in Sicily. Apulia and Terra d' Otranto do in fact suffer from dryness, the ground in summer being parched and cracked and covered with thick dust, which the wind carries over the plain in vast clouds. The influence of the moist winds of the Tyrrhenian Sea may be recognized in the comparison of the figures for Florence (42·3 inches), Leghorn (34·6), Genoa (49·8), on one side ;

with Bologna (21·1), Modena (25·2), and Alessandria (26·4) on the other, which brings out the increased condensation on the southern slope of the Apennines.

The high range of mountains in Calabria acts in the same way, and procures for Cosenza (43·3), a rainfall such as is not found elsewhere except at the foot of the Alps. Denza distributes Italy into the following zones in regard to rainfall: The Alpine (68·1 inches), the sub-Alpine (36·6), the West Apennine or Mediterranean (34·1), the East Apennine or Adriatic (31), and the Sicilian (20·1). Other meteorologists dwell on the difference in rainfall on the two sides of the Po, assigning 36 inches to the Transpadane, and 26 to the Cispadane regions.

#### ANNUAL RAINFALL IN INCHES.

Palermo . . . . .	23·2	Bologna . . . . .	21·1
Syracuse . . . . .	18·1	Modena . . . . .	25·2
Caltanissetta . . . . .	18·2	Alessandria . . . . .	26·4
Lecce . . . . .	21·0	Turin . . . . .	30·9
Cosenza . . . . .	43·3	Bellagio . . . . .	59·6
Naples . . . . .	32·4	Milan . . . . .	37·9
Rome . . . . .	31·4	Brescia . . . . .	35·4
Ancona . . . . .	28·5	Padua . . . . .	33·9
Lugano . . . . .	61·8	Venice . . . . .	35·0
Nice . . . . .	32·9	Udine . . . . .	61·2
Leghorn . . . . .	34·6	Belluno . . . . .	57·1
Florence . . . . .	42·3	Tolmezzo . . . . .	95·8
Urbino . . . . .	40·3	Ivrea . . . . .	54·7
Genoa . . . . .	49·8	Biella . . . . .	44·9

#### PERCENTAGE OF RAIN IN DIFFERENT MONTHS.

	S. of Italian Alps	Po District	Central Italy	S. Italy	Sicily	Malta
December . . . . .	6	8	10	13	15	22
January . . . . .	5	6	8	10	14	16
February . . . . .	4	6	7	8	10	10
March . . . . .	6	7	9	9	11	9
April . . . . .	8	9	8	9	8	4
May . . . . .	11	10	7	7	3	1
June . . . . .	12	9	7	4	2	0
July . . . . .	9	7	4	2	0	0
August . . . . .	9	8	6	5	1	2
September . . . . .	9	8	9	8	8	5
October . . . . .	12	12	13	12	19	14
November . . . . .	9	10	12	13	14	17
Total for the year.	47·7	31·8	33·0	31·4	23·6	21·6 in.

## PERCENTAGE OF RAIN IN DIFFERENT SEASONS.

	Palermo	Rome	Genoa	Florence	Siena	Milan	Verona	Padua	Rovigo
Winter . .	39.1	31.1	27.2	35.7	19.7	21.1	18.3	19.0	31.0
Spring . .	24.3	24.9	28.6	20.9	26.2	24.1	25.4	26.4	27.4
Summer . .	5.5	9.7	9.2	12.9	18.2	23.9	26.1	25.6	14.3
Autumn . .	31.1	34.3	35.0	30.5	35.9	30.9	30.2	29.0	27.3

## RAINFALL IN DIFFERENT YEARS IN INCHES.

	Turin	Milan	Venice	Genoa	Bologna	Florence	Ancona	Rome	Naples	Lecce	Palermo	Sassari
1885	43.54	45.85	27.18	51.43	36.63	33.78	31.08	35.57	39.06	32.31	27.91	24.81
1886	35.77	47.83	22.38	59.50	25.15	35.40	27.03	31.56	35.95	27.09	38.93	28.09
1887	27.34	39.19		54.96	39.85	37.20		39.46	32.49	24.61	28.36	28.44
1888	34.27	45.49	20.54	55.50	22.25	30.57	17.95	30.97	24.37	19.57	22.87	26.19
1889	36.58	46.39	34.35	57.74	32.74	27.19	18.99	44.77	43.72	31.42	29.58	26.20
1890	41.24	40.58	34.34	41.62	18.88	25.87	23.19	33.92	32.38	25.76	35.45	25.88
1891	34.95	43.60	20.09	47.99	21.36	27.22	17.45	31.68	31.15	19.27	38.17	20.80
1892	35.80	46.17	29.40	56.89	37.61	39.24	23.35	38.16	34.33	24.85	30.49	22.37
1893	33.82	33.92	22.98	52.59	33.90	30.79	22.23	26.62	34.92	23.27	26.59	19.92
1894	19.42	33.62	18.01	34.29	27.22	15.95	21.44	25.65	27.37	27.88	33.15	17.17
1895	30.54	33.98	28.01	48.86	42.66	38.48		36.67	40.34	19.37	28.32	24.70

The terrestrial magnetism is in general normally determined by the situation of the land and the position of the Magnetic Pole. In the Alban Mountains, near Melfi, on Etna, in the Roman Campagna, on the Ligurian coast, and in the Western Alps, small local disturbances have been observed, showing a deflection of the magnetic needle varying with the place. There seems to be an interference brought about by the presence of iron in neighbouring rocks such as serpentine or basaltic lava. Many of the Alban streams possess marked polar magnetism, apparently induced by that of the earth, though possibly due to lightning. These weak magnetic fields are only of importance to the surveyor, who occasionally has errors in his observations through them. Noteworthy phenomena seem to be exhibited in the small islands of Pantelleria and Limosa, where the horizontal magnetic intensity varies in a most peculiar way, an alteration of position to the extent of 30 feet sometimes causing a difference in variation of one degree.

The declination curves go from north-north-east to south-south-west in general. The amount of variation in 1892 was  $12^{\circ} 30'$  for Monaco,  $12^{\circ}$  for Bergamo, Spezzia, and the west coast of Sardinia,  $11^{\circ} 30'$  for Parma, Pisa, and the east coast of Sardinia. The  $11^{\circ}$  curve

goes from Agorda to Ferrara, bulging out, however, towards the west in the plain of Lombardy, and deviating eastwards in the Umbrian Apennines, and then going to Orbitello and Tunis. Udine, Pesaro and Rome have a declination of  $10^{\circ} 30'$ ; Solmona, Montecassino, Palermo, Girgenti,  $10^{\circ}$ ; the Tremiti Isles, Pesto, Lipari, Vittoria, Malta,  $9^{\circ} 30'$ ; Molsetta and Eastern Calabria,  $9^{\circ}$ ; Brindisi,  $8^{\circ} 30'$ . In Sicily there is a bend to the east in the direction of the island, greatest in the vicinity of Etna. The dip of the needle in the same year followed lines from west-south-west to east-north-east, which displayed irregularities only in the Alps and the south-east corner of Sicily.

DIP OF THE MAGNETIC NEEDLE.

Moncalierie, Pavia, Verona, Padua, Treviso . . .	$61^{\circ}$
Pisa, Florence, Pesaro . . . . .	$60^{\circ}$
Orvieto, Grottammare . . . . .	$59^{\circ}$
Rome, Solmona, Termoli . . . . .	$58^{\circ}$
Caserta, Benevento, Molsetta . . . . .	$57^{\circ}$
Pisciotta, Metaponto, Brindisi . . . . .	$56^{\circ}$
Cosenza, Cape Leuca . . . . .	$55^{\circ}$
Trapani, Palermo, Gioja . . . . .	$54^{\circ}$
Girgenti, Bicocca . . . . .	$53^{\circ}$
South-East Corner of Sicily . . . . .	$52^{\circ}$

## CHAPTER VII

### Hydrography

THE narrow elongated form of the peninsula with a range of mountains traversing its whole length does not permit the development of extensive river systems. It is only in the plain of Piedmont and Lombardy, the depression between Alps and Apennines, that such a system, that of the Po and its tributaries, is evolved. Of other rivers of any importance there are but few to name : first, the Arno in Northern Tuscany which drains the district of Arezzo, Florence, Pisa ; then the Tiber (Tevere), which collects the brooks and streamlets of the western slope of the Umbrian and Roman Apennines, the artery of the central and Neapolitan range ; and lastly the Sele, a short but plentiful river, the sources of which lie on the watershed of the Basilicata. On the east of the Apennines we have the Ofanto, the one stream in Apulia, and the Pescara, which carries the waters of the district of Gran Sasso into the Adriatic. The numerous other rivers, rivulets and brooks are for the most part short and empty themselves directly into the sea without uniting. The islands too, owing to their small size, possess no elaborate streams. The Simeto in Sicily is, perhaps, the most important.

As has been said in the foregoing portion of this work, the snow in the Southern Alps begins to melt in March, in the Apennines it often begins in the middle of February. This is at the same time a season of continuous and violent rains, so that the Italian rivers are almost invariably flooded in these months. A considerable portion of the water from the snows of the Alps is taken up by the lakes through which the rivers run, but in the Apennines this regulating element is entirely absent. If the thaw sets in suddenly and accompanied by heavy rain the rivers, which in summer lazily trickle as narrow threads of water in the broad river beds, become raging torrents, bursting with devastating force over the fertile lands at the foot of the mountains and bestrewing the rich fields with its detritus for the rest of the year. Then the short coast streams resemble mountain torrents with their deposits of pebbles, as there are no forests with their absorbent carpet

of moss on the heights, and the clay or loose rock has no protection from the destructive agency of the rain channels and smaller tributaries.

All these "Fiumare" are steep and have relatively broad pebbly beds in which water may often be looked for in vain during the summer months. If there is any it is generally of a yellowish brown colour, and muddy from the washings of fine clay and loam of which the slopes and summit consist, and at flood time its colour becomes markedly deeper. We speak of the "Yellow Tiber," which has a yellowish brown appearance in spring. The Arno is always dirty, and the Ofanto is nearly chocolate-coloured in flood time. None of the numerous rivers from the Apennines, whether they go into the Po or the Adriatic, have the clear water of a mountain brook, or the green colouring caused by the slight turbidity of the Alpine waters.

The rivers which drain the region off Bologna—the Reno, the Panaro, and the Santerno—are specially dreaded, as their short steep portion is followed by a long flat course, and the water rolls down its detritus with a vast impetus, spreading out over the land near the shore like a lake, and owing to its being so slowly drained off increases to such an extent that men and cattle run great danger of being drowned. The last catastrophe of this kind took place in the autumn of 1897 at the commencement of the period of winter rains, and visited the district between Bologna and Rimini so severely that the assistance of the military alone prevented great loss of human life. The damage was estimated at from £150,000 to £200,000. The Ofanto often shows itself similarly malignant; Horace alludes to the floods of this river, when he calls it *late sonans Aufidus*. After an extensive upper section the whole of its middle course lies in a deep gully, and the river washes away its banks, which break off in large clods into the raging, gurgling brown flood, covering the peninsula of Apulia with the débris. This undermining activity of the Apennine rivers is a constant source of danger to all bridges, whether for railways or carriage roads, as walls even with deep foundations are found insufficient, the supports being carried away by the water from behind or from below. Train traffic is constantly being interrupted in the spring, and for the most part in consequence of the threatened fall of a bridge, or of inroads of mud such as are called *lave* in Campania. In the Apennines near Modena there have been counted, during the last 300 years, forty-three large mountain slides of the soaked eocene marls and the chalk or the pliocene clays and sands. Besides many unimportant landslips, the following mountain slides have taken place during the last two decades: 1881, at Castel Frentano, not far from Chiete; 1882, at Mondaino, near Rimini; 1889, at Casola Valsenio, near Faenza; 1892, at Frana del Sasso in the Valley of the Reno.

In contrast with the broad valleys cut through soft rocks are the deep gorges which occur in the limestone districts and generally form transverse valleys. These valleys, as for example the middle valley of the Platano, and the exit of the Tanagro from Monte Albarno, are so difficult of access that carriage roads and railways have to take

a serpentine course or are carried through tunnels. Most inconvenient obstacles to traffic are interposed by the gullies which are excavated in the soft volcanic tufa even by small brooks. To a traveller from Rome to Naples a good picture of this is

presented first at the foot of the Alban Mountains, and then in the district of Teano. Southern Etruria from Monte Amiata to

Rome is also traversed by deep channels leading down to the sea or to the Tiber, and the ancient towns were built on the salient angles of land where two of these streams met. In the easily worked walls of tufa which bound the valleys, the Etruscans dug out their funeral chambers, the contents of which supply almost all the information we have of this nation.

Veii and Falerii, whose fortifications lay between deep perpendicular valley walls, were regarded as impregnable and long defied the attacks of the Romans. Many of these valleys are made use of as roads in summer. At Sparnise and Teano the whole traffic is carried on by way of river-beds of this kind. Even in Southern Sicily the rivers form convenient by-ways into the interior, but in winter after rain the brown water sweeps along them so that it is only possible to make use of this road on mules or asses; the foot passenger makes his way along the edges, where he is nearly lost in the mud.

By this erosive agency of the water great masses of rock are carried from the mountain and heaped up in the lower land or taken directly into the sea. The accumulations produced by the rivers have brought about many changes in the coastline and in the form of the low lying land, and at these we propose now to glance.

The most important of these transformations is in the delta of the Po. The Po rises on Monte Viso at a height of 6,400 feet in an elevated boggy valley called Piano del Re, issues after a short mountain course into the alluvial land between the Western Alps and the hills of Montferrat, takes several turns towards the north, and assumes its final easterly direction near Turin after receiving the Dora Riparia, keeping



CIVITA CASTELLANA.

On an isolated rock of tufa between affluents of the Treja.

A Arx; U Urbs; N Necropolis; P Ponte di Terrano; T Treja; S Saleto; M Rione Maggiore.

this direction except for its many windings till it reaches the Adriatic. Its bed marks the line of maximum depression of the plain of Upper Italy. If we place its commencement at the point of union of the Alps and the Apennines, we get the following rates of descent corresponding to the heights of some of the towns—

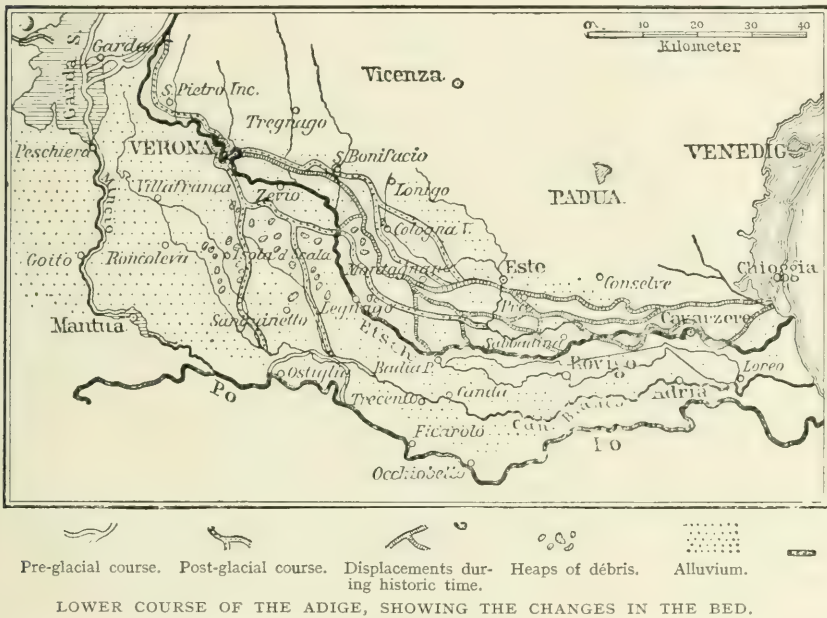
Cuneo	1,408 ft.)	} 710 ft. in 50 miles
Turin	788 ft.)	
Piacenza	216 ft.)	} 572 ft. in 125 miles
Ferrara	8 ft.)	
		208 ft. in 112 miles

Accordingly the rate of descent amounts to about 14 feet to the mile in the first section, nearly  $4\frac{1}{2}$  feet to the mile in the second, and only 22 inches to the mile in the third. Thus the stream has a strong current as far as Piacenza and is still capable of erosive action, but from that place the speed diminishes with the slope, and deposit of the suspended rock commences. This originates in the upper course of the stream, and the description applies rather to the Apennine rivers than to those of the Alps because, as has been already remarked, the larger of these latter deposit much of their suspended matter in the lakes which interrupt their course. The Adige, which issues from the higher land at Verona, has no clarifying basin of this kind and at Legnano, where it runs parallel to the Po, commences to bestrew the bottom with *débris*. From there to the sea, and in the case of the Po from about Mantua onwards, may be reckoned as the present alluvial region. In earlier times these depressed flat portions were over-flowed every year on wide stretches of country, and the region was thus slowly extended. In order to confine these inundations, which naturally wrought much damage in the highly cultivated country, the rivers have been enclosed for several centuries with high and strong embankments. The shiftings of the embouchure of the Adige are very interesting, and we reproduce a map of them by Nicolis. At one time the river flowed directly into the Po, and it has gradually constructed a new channel for itself by means of the heaps of *débris*, so that it now runs parallel to the other river. At high water, however, it has repeatedly broken through its banks of pebbles and returned to its former direct route.

The embankments along the Po are over 600 miles in length and consist of several parallel lines of which the principal dam (*frollo*) runs close to the river. It is 26 feet broad at the top, which is above high-water mark, and its breadth is so arranged that the bed is contracted at the mouth when the tide is rising, while higher up a certain play is allowed to the river. The lower dykes, running side by side with this, traverse the old watercourse at some miles distance from

one another, and their task is to prevent the floods from bursting forth and covering the fertile soil with sand.

The consequence is that the pebbles, which were formerly distributed over wide areas, are now collected in the bed itself, which has no longer a sufficient fall, and the bottom is being continually raised. The embanked stream thus grows up over the surrounding country and reduces the fall further up the stream on the one hand, while on the other, in case of the bursting of the dam, the low-lying land is threatened with danger of greatly increased severity, and after a catas-



trophe of the kind an entirely new course may be taken by the river as was the case with the Hoangho in China.

The tributaries also rise above the ground at the same time as the main stream, unless they are carried off by lateral canals, and the country is gradually becoming pervaded by broad ramparts, on the summit of which one is surprised to find a river. Near Ferrara the Po flows about three feet above the level of the town, and a similar statement holds of the embankment of the lower Adige as well as for the dykes of the Tagliamento near San Vito. The neighbouring flat countries consequently suffer the heavy disadvantage of not being drained, or rather they are constantly receiving moisture by infiltration from above and are being converted into swamps. These swamps of the Po and the Adige are made use of for the cultivation of rice, being

easily flooded to the requisite depth by canals and sluices, but are of extraordinary insalubrity, fostering fever and ague.

The Delta of the Po really begins below Ferrara; the stream divides into several branches and proceeds to the Adriatic with a very slight descent (8 in 100,000). As the sand is prevented from spreading in the middle and upper sections of its course, the river carries more than it would otherwise do into the sea, because of the greater power of transport in the contained masses of water. Thus the delta, since the construction of the dams, has been rapidly increasing and pushing forward into the sea (220 feet in a year). In reference to this process the assertion has indeed been maintained that the whole of the plain of Upper Italy was wrung from the sea by means of sedimentation by the rivers. This is hardly correct, as tertiary strata lying above sea level have been met with in boring; the débris has indeed levelled the irregular relief of the former surface, but has only actually created land in the lower parts somewhat to the east of Ferrara. The former shore can be recognized with certainty by the dunes which run from the mouth of the Adige, passing to the east of the town of Adria to Comacchio, and are continued north and south by the Lidi of Venice and the sand ramparts of the mouth of the Reno. The lagunes behind these dunes right and left of the Po still exist, but those along its course are filled up, the dykes themselves are broken down, and the sea bottom in front is covered with a layer of pebbles, on the upper surface of which the Po branches out, taking now one way and now another.

Near the town of Adria it divides into three, the Po di Goro, Po della Maestra, and Po di Levante; the middle one of these has two branches, Po della Maestra and Po di Tolle. The principal mouth has much altered in position; in 1869 it moved to the north-east corner of the delta and has since been pushing the land forward in this direction.

Since the middle of the sixteenth century we have had accurate information of the increase of the land so that it has been possible to construct the accompanying map, which is taken from Berghaus' *Atlas der Hydrographie*. The current along the coast in the inner portion of the Adriatic runs southward from Venice along the Italian coast, carrying with it great masses of sand which are spread abroad on the shore. It is from this material that the dune ramparts of Comacchio are constructed, and the land which lies between the lake Valle and Ravenna is augmented by it, besides by what it receives from the alluvium of the Reno. Ravenna was an important port in the time of the Romans; it stood on piles in a swamp or coast lagoon and was united to the Po by a canal. The alluvium of the Po, however, was so great as to block up the harbour completely; the town at the

same time was set back from the shore and became what it is at present, an inland town some six miles from the sea. There are pine woods on the new land of which we shall speak later, which have materially helped in the consolidation of the loose sand. This alteration has necessitated the canalization of the Alpine streams which flow into the sea there, as they would otherwise have formed swamps. The lower course of the Adige has been embanked in the same way.



THE DELTA OF THE PO, AND ITS INCREASE SINCE THE COMMENCEMENT OF  
HISTORIC TIME.

as also the waters which descend from the Euganean Hills, the lower Brenta, and most of the streams flowing into the lagoons of Venice.

The aggregation caused by the activity of the Po is said to be compensated to a certain extent by a slow sinking of the coast from Venice to Rovigo. Roman buildings have been discovered there below sea level, and it is said that there is a depression of 6 inches in a century. Whether this is really due to a general geological process, or to a settling down of the loose alluvial soil first soaked with water and subsequently dried, is by no means established. The destruction by the sea of the Lido, which was covered with woods in the Middle Ages, is due to its diminished power of resistance after the trees had been cleared, especially against the wind, a phenomenon

which has also taken place on the shores of the Frische Haf. The thickness of the alluvial deposits near Venice (400 feet) only goes to show that the sea had that depth at one time, but is not a convincing proof that the sinking is still in progress.<sup>1</sup>

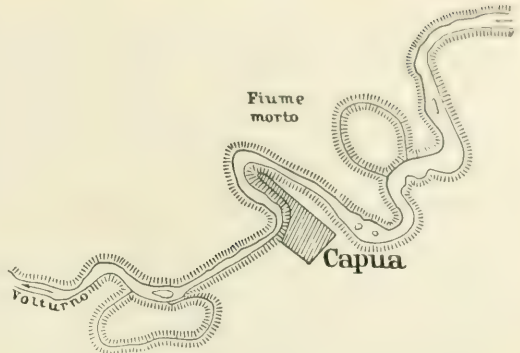
The sand brought down by the Po travels southward along the east coast of Italy to Rimini, Ancona and even to the country round Monte Gargano. The monotonous line of the shore is modified by this stream and its deposits of sand, which become finer and finer as they get further out. Accurate investigations recently made with the microscope show that the material actually does come from the Po, for it contains minerals of Alpine origin, such as blue hornblende (glaucophan), which does not occur in any range of mountains in the vicinity, nor elsewhere on the coast. The Laguna di Lesina and Laguna di Varano, pieces of water lying right and left of the Punta di Mileto are shut off by dunes. Even the spur of Monte Gargano is said not to prevent the Po-sand from blocking up the harbours of Barletta, Trani, Molsetta, and Bari, though the chief fault lies with the Ofanto rather than the Po. The Ofanto is but little regulated, and consequently overflows almost every year; it therefore does not carry to the sea so much suspended matter in proportion as the Po, even disregarding the comparative smallness of the region it drains. The coast stream is able to master this smaller amount of matter and prevent it from being deposited and forming a delta, and in this the far steeper descent of the bottom of the sea has its share. In any case the sand, and still more the clay and loam suspended in the water of the Ofanto, suffices to cause much damage to the southern harbours, already by no means good ones.

North of the mouth of the river, in the corner made by Monte Gargano, lies a marshy alluvial land with some shore lakes (Lago Salso, Lago di Salpi), from which bay-salt used formerly to be obtained. The streamlets Cervaro, Candelarò, Salsola, coming from the range of mountains and flowing into the sea here, have covered this land with deposits, but now find no regular outlet, and in the rainy season change it into a noisome swamp very difficult to drain.

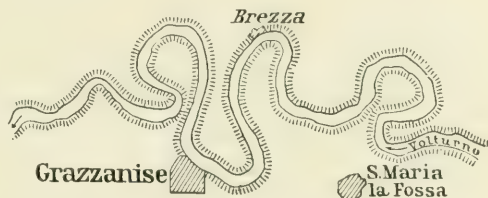
The Volturno on the Tyrrhenian side resembles the Ofanto in having no delta. Its suspended matter is distributed along the coast of Campania, towards both north and south, giving rise to the flat sandy plain between Cape Misenum and Monte Massico. Small lagoons, such as Lago di Licola and Lago di Patria, and low dunes overgrown with dense underwood show that the shore formerly lay further back. The Romans constructed a tunnel through the solid

<sup>1</sup> Nissen's *Italische Landeskunde*, I. pp. 197-8, contains particulars of the river system connected with the Po, together with a table.

rock to prevent the effluent of Lago di Fusaro from being choked with sand, and its mouth is so placed that the sand of the Volturno cannot directly reach it. The Volturno from Capua to the neighbourhood of the sea runs in a bed with steep walls cut in the volcanic tufa, and its descent has gradually become gentle from constant erosion. Thus the river undergoes numerous windings, leaving some of these dry, and at the same time making new ones, so that this section of its course may serve as an excellent example of erosive energy, and we have accordingly reproduced it in an illustration.



CURVES OF THE VOLTURNO NEAR CAPUA  
with two "dead loops" (*fiume morto*).



CURVES OF THE VOLTURNO BELOW CAPUA  
with impending shortening of the serpentine in two places.

The Tiber also, the largest and longest river of Italy after the Po, does not form a regular delta. It rises at the dividing line of the Etruscan and Roman Apennines, flows in a longitudinal valley as far as Perugia, bursts obliquely through the Umbrian chain to regain its former direction in another longitudinal valley until close upon Rome, when it makes a turn at right angles, in the depression between the volcanoes of Bracciano and Albano, which brings it to the sea. The Tiber flows through regions of soft rock, whether pliocene clays or volcanic tufa, receives numerous springs containing lime, and carries the carbonate of lime down to the sea in solution. The Acque Albule, near Tivoli, according to Jervis, alone abstracts nearly 700 tons of solid matter daily from the mountain. This amount of sediment, mechanical and chemical, must have formed a delta at the mouth of the river but for the operation of various other influences. There is first of all a littoral current running from south to north, which casts the suspended matter on the shore of Etruria; secondly, the sea rapidly becomes deep, and thirdly, it seems that this Roman coast is at present in a period of sinking, so that the alluvium only

just balances the submersion. The fragmentary subsoil of Campania has not yet come to a position of equilibrium, as is proved by the recent displacements of the shore at the cliffs near Porto Anzio and Cape Circeo. In the first place there exist beds of peat at a small depth under the sea, originating in lagoons behind sand hills, similar to what is called the marine peat on the island of Usedom, and these testify to a recession of the sea shore. Still the deposits of the Tiber are of sufficient importance to push the ancient Roman harbour some few miles inland. One part of this deposit produces the sandy shore and the series of dunes south of the mouth of the Tiber, and is said by many inquirers to be the cause of the swamps in the Roman Campagna, the streamlets from the Alban mountains not being able to find an outlet to the sea behind these walls and becoming stagnant. A few canals would remedy this without much difficulty.

The cause of the fever-haunted Paludi Pontine or Pontine Marshes is apparently to be sought for elsewhere, and arises in the way just indicated in treating of the construction of the country. The low land stretching from Terracino towards the Monti Laziali, drained by the river Sisto and by laboriously constructed canals, lies on the flanks of the Apennines, and may be looked upon as a longitudinal strip of the mountain caught in the depression, between the pliocene promontory of Nettuno and the Volscian mountains, like a ditch with sides of unequal height. This can also be observed northward in the Campagna, because the pliocene of the marine cliffs suddenly comes to occupy a narrower zone under the surface of the sea (130 feet), and only comes to the surface again in the neighbourhood of Rome. The Pontine Marshes indicate a longitudinal cleavage on which the volcano of the Alban Mountains has thrown its débris (cf. outline, p. 48). Movement is not excluded in the case of this ditch, which is sinking lower, so that water collects there, soaking the ground and forming marshes which no draining by canals or planting of trees is able permanently to withstand. The deposits from streams rich in sediment might, considering the slow rate of tectonic action, bring about an improvement, but streams of this kind do not exist in the Volscian range.

The condition of things at the Arno again is quite different. This river collects the water from its springs as far as Arezzo in a longitudinal valley, breaks through the range by the Val di Chiana and then turns north into a direction opposite to what it had at first as far as Pontassieve, thus crossing obliquely the narrow chain of the Prato Magno, and issues in the depression of Florence. Below Florence it has yet another ridge to gnaw its way through before beginning the last section of its course along the north end of the

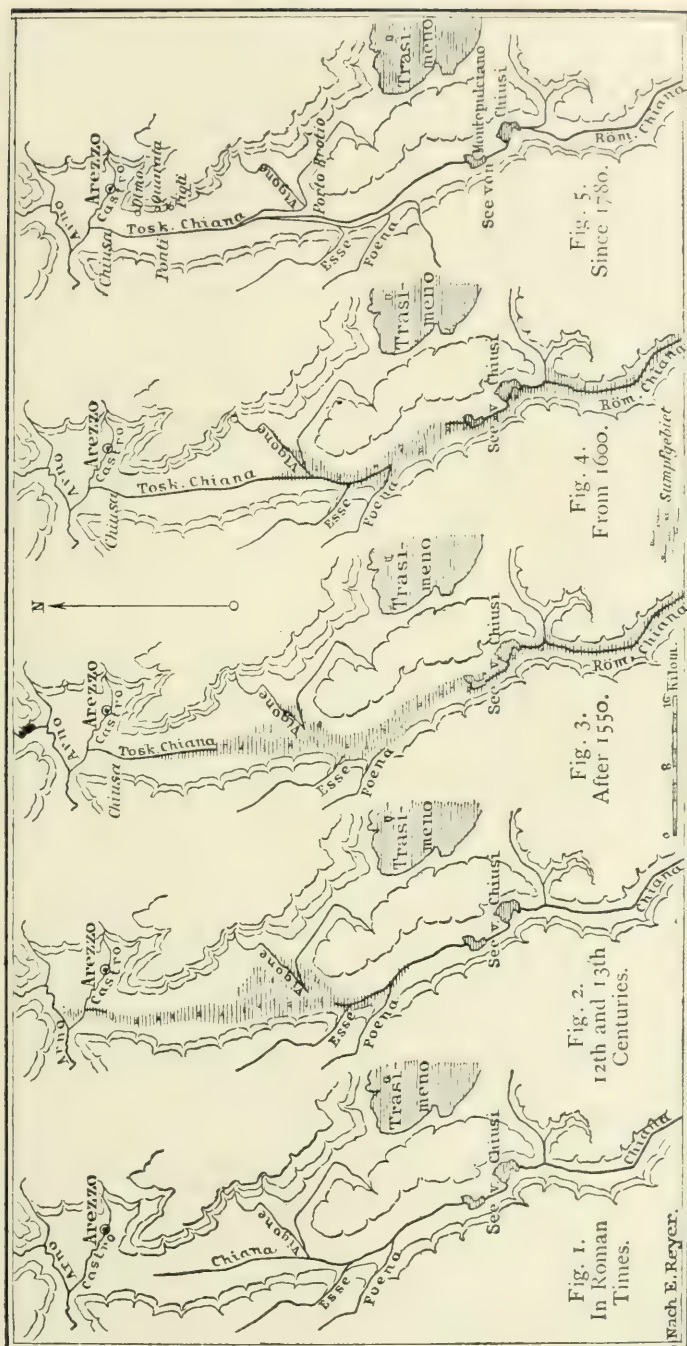
Tuscan Hills and south of the Apuanic Alps. Finally it enters the sea not far from Pisa. We see from the vast banks of débris and masses of travertine that the process of opening the valleys and basins into one another must have taken a somewhat long time, and that temporary lakes occupied the place of the present valleys, the surface sinking with the incision of the Arno till at last they disappeared. The mouth of the Arno once formed a funnel-shaped bay near Pisa, reaching to the foot of the Apuanic Alps, and this bay was filled up in the course of time so as to produce the present coast-line. The alluvium is so important as slowly but constantly to push forward the present shore. The formation of a delta, however, is impossible on account of the littoral current, which carries the masses of sand and mud towards Liguria. The plain of Pisa, with its banks of débris and travertine, on the other hand, is a true refuse heap, which may have grown up in a bay lying back and little influenced by the current along the shore (cf. map, p. 97).

The changes at this spot, besides what they owe to the Arno, are due also to the Serchio, flowing down from the north and rich in suspended matter, the two rivers having a somewhat corresponding history. They rise far asunder and flow into the Apuanic Gulf, pushing forward their deltas, one from the west the other from the north. The heaps of débris carry along their rows of sandhills like the present mouths of the Po; and behind these lagoons and their waters charged with lime, have formed deposits of tufaceous limestone favoured by the growth of bog plants. Then when these sand hills and deposits had so much increased as to be brought into connexion, the Serchio became for a time a tributary of the Arno, stretching behind the ancient ramparts of sand in a channel still marked by swamps close to where it disembogued into the Arno. This went on till the Serchio levelled its bed so as to break through the bar dividing it from the sea, and made itself a mouth of its own.

Numerous dunes parallel to the shore occupy the edge of the coast from Leghorn to Viareggio, some of them thickly overgrown by the pinaster (*Pinus maritima*). The depressions behind and between these dunes are filled with mud and sand, they are dried up towards the time of the usual floods, and thus a new region for cultivation is created which may become really productive in time, and which already forms pasture land with luxuriant meadows. The underground water indeed lies very near to the surface, the whole soil being well soaked with water, and this holds for the plain of Pisa as far as Pontedera. Occasionally from this collection of rubbish, which is like mud saturated with water, streams issue from holes or wells in the stratum of clay on the surface, which, confined till then, flow with

vigour, and after a short course empty themselves into the Arno. In general, these streams have sunk into the porous *débris* at the foot of the hills, and thus are still subject to a certain amount of pressure, so that when this subterranean reservoir has been tapped for domestic or industrial purposes the boring has always proved successful.

The history of the Upper Arno is as full of vicissitudes as that of the lower. It seems to be established that it used not to flow northwards near Arezzo, but southward in the Valle di Chiana to the Tiber, of which it was a tributary. The broad furrow of this valley has but a slight fall, and a watershed of only a few yards in height between the present Arno and the Tiber was so fever haunted that the inhabitants migrated, and this important trade route was abandoned. Since the eighteenth century there has been considerable improvement both as to dryness and healthiness, in reality indeed, because a fall to the Arno has developed itself and the watershed has shifted southward towards the Tiber. These river displacements are thought to have taken place somewhat in the following manner, as the accompanying figures specify. In prehistoric time the Arno proceeded southward through the Chiana valley, there its tributaries, especially the Castro, formed a heap of *débris* in the valley by Arezzo, causing the Arno to turn aside to Pontassieve into the other longitudinal valley. In the former valley of the river from Arezzo to Chiusi ran a brook, the Chiana. This however had so little water that it was unable either to carry away the *débris* brought from the sides, or to cut through them, so that in the Middle Ages the upper valley of the Chiana became a swamp which by being dammed up rose so high that a slow overflow to the Arno set in. We meet with this in the middle of the sixteenth century as the Tuscan, in opposition to the Roman, Chiana; the northerly force of the water had somewhat abated, the southern valley near Chiusi and beyond also becoming boggy. Then took place a true bifurcation at this place, as the Chiana bog was drained by two river systems otherwise quite disconnected. The erosive activity of the Tuscan Chiana, which cut itself a bed in the *débris*, drained the northern part after the seventeenth century and became the principal stream, while the Roman branch got more and more choked up. Two small lakes (Lago di Chiusi and Lago di Montepulciano), the small rivers Elsa, Fœna, Vigone have thus gradually been withdrawn from the basin of the Tiber, and have since the eighteenth century belonged to the system of the Arno. The region has once more become healthy and habitable, and the railway from Florence to Rome makes use of these natural highways without danger to the passengers.



# VALLE DI CHIANA

With the alterations in the course of the Arno and the Chiana during historic times.  
 N.B. See = Lake; Chiusi is the Ancient Chisum.

Nach E. Reyer.

The littoral current on the coast between the mouths of the Tiber and the Arno carries the sediment northwards, thus encountering several obstacles, the projecting rocks of Capes Argentario and Troja and the mountain of Piombino. The mass of débris is increased by triturated volcanic tufa and pliocene clay brought down by the small rivers from the volcanic ridge of Southern Etruria and the district of the Seno all the year round, necessarily causing extensive floods, which hinder the course of the river at its mouth, and form swamps. These low lying tracts, often flooded and often very productive, and resembling green meadows, carry the germs of disease to the inhabitants. The Tuscan Maremma especially enjoys an evil renown, the malarial vapours driving away the inhabitants in summer, unpeopling the towns and threatening with continual danger of death those who are courageous enough to remain. The saying applied to the Roman Campagna—"You get rich in six months, but you die in four," holds also, or used to hold, of many patches of land on this coast. Much, however, has been done to check the fevers. Let us examine this question a little more closely.

In earlier times Monte Argentario was undoubtedly an island belonging to the Tuscan Archipelago, such as the neighbouring cliffs of Giglio and Giannutri are at present. The littoral current, turned aside by this impediment and restrained from exerting its full force, has deposited dunes and ramparts of sand between the mountain and the mainland, first making tongues of land and finally uniting the island to the shore. A swamp was left between these barriers, in the midst of which was built the town of Orbetello, as unhealthy a town as there can possibly be. The peninsula of Piombino in the same way was an island, which came into connexion with the mainland in a somewhat similar way. But in this case a river, the Carnia, flowed into the lagoon behind the cliff, and the mud from this, accelerated later by artificial means, gradually turned the mountain into a peninsula. The Ombrone empties itself between the two peninsulas. This is the most important river of Tuscany; it has deposited rich sediment right and left of its course in the form of coast ramparts, and has created polders with no rise above low-water level. The district of Piombino has shown how the evil arising from swamps can be met, and how mountain torrents, to which the unhealthiness is attributed, may be rendered valuable. The solid matter instead of being allowed to be carried down to the sea is made to accumulate in the low lands by damming the water on the boggy soil; these lands are thus raised, the level of the underground water sinks, and the air again becomes wholesome. This system is called the *Colmate*, and has succeeded excellently in Tuscany.

The original cost of the embankment, it is true, was some hundreds of thousands of pounds, but wide stretches of coast have been rendered habitable by it. The whole strand from Viareggio to Orbetello was pestilential, and has with small exceptions become fit for habitation. The positions which have not been drained are the lagoon near Piombino, into which the Cornia flows, a district poor in streams north of the Ombrone, and the lagoon of Orbetello. Fever used to be very destructive in the Maremma (and in this respect we may include the coast of Northern Tuscany), when after high water the river developed luxuriant vegetation in the lagoons; the surface of the water sank by evaporation or oozing away, salt water was brought in instead, by a storm or by subterranean channels, which killed most of the organic life and made a deposit of mud, a congenial soil for the germs of fever.

Besides the bacilli which when drunk in impure water produce typhus and diarrhœa, the moist earth produces the micro-organism of malaria (*Hæmamæba Laverani*) perhaps belonging to the animal kingdom, which lives in the red corpuscles of human blood, and destroys them, producing violent attacks of fever which slowly lead to death. The Italians call this disease *Malaria*—bad air—because it is confined to certain places, where people are especially liable to be attacked by it in the rising vapour and mist of the evening. It is most dangerous to sleep in a fever district of this kind, even when traversing it in a carriage or a train, and it is advisable to keep the windows shut. Opinions are divided as to the nature of the infection, and as yet the exact substance which nourishes the germ of the disease has not been discovered.

Some think that it grows in the moist soil, that it rises into the air with the evening mists owing to its small size, that it is breathed in and makes its way from the lungs into the blood. Others believe



that the infection is transmitted by mosquitoes,<sup>1</sup> and that these little creatures, generated in tainted water, transmit the amoeba through the little wounds made by their stings, and thus introduce them into the soil for their nourishment, a warm blooded organism. This latter view seems to be confirmed by the investigations of Dr. Koch in East Africa, in reference to the transmission of infection by insects. Be it as it may, these tiny shapes multiply rapidly, and if they meet with a good supply of blood the first outbreak of fever frequently sets in with a cold shivering fit after from 12 to 24 hours. The duration of the attack varies; if not completely cured it returns every three or four days, giving rise to the expressions *tertian ague* and *quartan ague*. It is said that these are caused by hæmamœbæ of different species, and that when fever is irregularly intermittent it is due to a mixture of the two. The return of the disease causes extraordinary suffering, the liver, the spleen, and other blood-forming organs being especially attacked, the complexion turns yellow, the features grow lean and flabby, the slightest provocation, such as a change from sunshine to shadow, brings on an attack of fever, and the patients finally die from loss of strength.

Malaria being the worst plague of Italy, and the only remedy being drainage, whether by colmate, by digging canals or by planting forests, hundreds of thousands of pounds have already been spent to this end, all such measures being classed together under the name of "Bonificazione." Besides those already named the following regions among others are unhealthy: the plain of Pæstum, the lower part of the Simeto valley, the terminations of the valleys in Sardinia, the plain of ancient Metapontum and Sybaris on the Tarentine Gulf, the district surrounding the Fucine Lake, and Lake Agnano near Naples.

The following table gives the length, the distance of the mouth from the source and the extent of the river basin of the more important rivers.

<sup>1</sup> This is now considered to be absolutely proved. (Trans.)

		Length in Miles	Distance of Mouth from Source	Area of River Basin in Sq. Miles
1	Adda . . . . .	187	98.2	3085.1
2	Adige . . . . .	353.5	147.5	5395.5
3	Arno . . . . .	142.9	71.4	3301.3
4	Brenta . . . . .	108.4	63.4	894.9
5	Dora Baltea . . . . .	92.8	69.1	3021.9
6	Garigliano . . . . .	92.2	60.0	1105.9
7	Isonzo . . . . .	77.0	44.7	1269.2
8	Mincio . . . . .	119.4	29.0	1188.5
9	Ofanto . . . . .	92.8	65.6	1188.5
10	Oglio . . . . .	139.2	85.3	2394.3
11	Ombrone . . . . .	78.9	56.5	1413.3
12	Pescara . . . . .	92.8	57.7	1212.1
13	Piave . . . . .	119.3	77.0	1669.0
14	Po . . . . .	391.9	267.4	28923.1
15	Tagliamento . . . . .	101.4	63.4	616.4
16	Tanaro . . . . .	118.5	65.9	3238.6
17	Tiber . . . . .	230.5	138.3	6847.0
18	Ticino . . . . .	157.3	98.0	2801.2
19	Velino . . . . .	46.1	37.0	1445.7
20	Volturno . . . . .	96.8	50.7	2161.3

The Italian rivers are not navigable. In ancient times the shallow ships came from the sea up the Tiber as far as Rome. Since then the mouth of the river near Ostia has been getting more and more choked with sand and would be quite inaccessible for modern steamers, on which account Civita Vecchia has become the port of Rome. Pisa lost its importance as a maritime town owing to the receding of the land from the sea, and was replaced by Leghorn, and the plans for uniting Rome as well as Pisa with the sea by means of ship canals have had to be given up.

The Po and some of its tributaries are navigated by small boats. The plain of Northern Italy is traversed by a tolerably extensive network of canals for craft of this kind and for irrigation. This commences at Turin with the Canale Cavour leading to the Ticino. At Milan there is a junction of several canals, for this city is united with the Ticino and Lago Maggiore by the Naviglio Grande, with the Po by the Naviglio di Pavia, which branches off near Abbiategrasso, and with the Adda and Lake Como by the Naviglio della Martesana or Canale Muzza. For irrigation there are the Canale Bianco between Ferrara and Padua, which receives the Tartaro, the Canale Crozona and Canale di Pontellungo with the streams from the Monti Etruschi and Berici, and, lastly, the Brenta canal ending in the lagoons of Venice.

There are only three waterfalls of any great size, that at Tivoli,

that at Terni, and the Falls of the Tosa, if we exclude the smaller Alpine brooks and those of the Tuscan Apennines. The renowned Falls of the Tosa (*Cascata della Frua*) lie in the upper Val Antigorio where the river, 85 feet wide, falls in three cascades from a height of 469 feet down a sloping wall. The Cascade di Tivoli are formed by the Teferone or Anio where it breaks through the last chain of the Apennines on its way to Campania. The fall amounts to 328 feet and takes place in a gully so narrowed by a deposit of travertine that the bed no longer suffices for the stream when it is full, and a new and more convenient effluent has had to be made artificially in the Traforo Gregoriano, a double tunnel 1000 feet long. Numerous smaller waterfalls called *cascatelle* make their appearance below this place.

The waterfalls of Tivoli have been so often described with pen and pencil that they must be well known to most people. The Falls of Terni or Cascade delle Marmore, fed by the Fiume Velino, a tributary of the Nera, are less often visited. The general conditions are analogous to those of the Falls of Tivoli. The river, before issuing from the range proper, has to cross a bar, it forms a waterfall and deposits around it vast banks of limestone, thus increasing its bed and the height of the plunge. This is nearly 600 feet, and this fall is thus one of the most beautiful in Europe. The rapid growth of the travertine required, if the plain of Rieti lying above it were not to be reduced to marsh, that conduits should be constructed, and the first of these was excavated by Manius Curius Dentatus in 271 B.C. The Papal authorities made new apertures and adjustments on three or four occasions (the last was in 1787) and at present after the lapse of a century a new perforation is required. The Falls of Tivoli and Terni have been recently turned to account, those of Terni being used for a Government cannon foundry, just as the less powerful cascades of the Liri at Isola are used for driving looms.

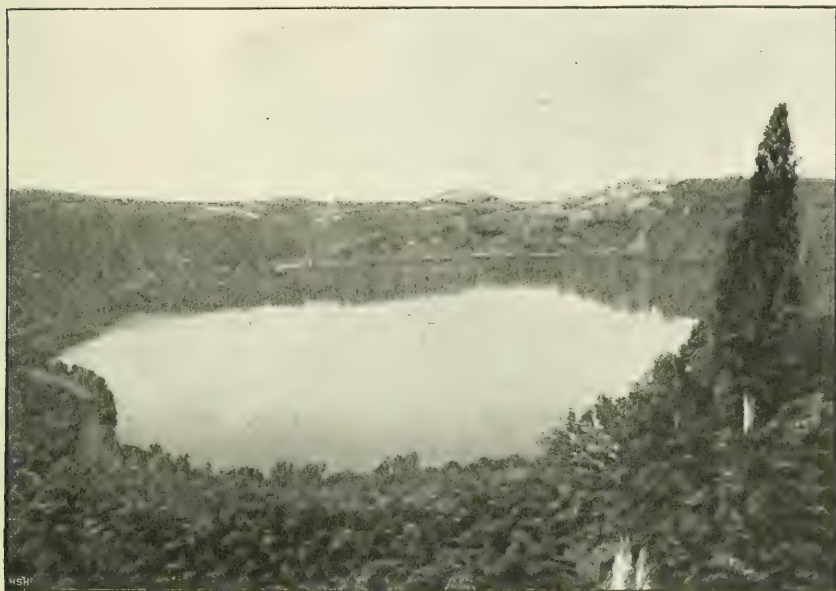
Besides the flowing waters we have to consider the lakes, and among these the most varied types are to be found. They are chiefly limited to Northern and Central Italy, the collections of standing water in the south being inconsiderable.

We have already, when treating of volcanic action, spoken of crater lakes such as the *Lagi di Bolsena*, di *Bracciano*, di *Albano*, di *Nemi*, di *Averno* and di *Agnano* in the Roman and Neapolitan districts. We have also touched on the opinion held by some geologists that the larger basins, such as that of *Bolsena* and even *Albano*, are caused by subsidence of the ground. The altitudes of these pools or volcanic caldrons are of course very different, as are also their surfaces, but they have in common the circular or elliptical contour and the funnel

shape. The following table gives figures as to size, circumference and depth of some of these—

	Area	Elevation	Depth
Lake Bolsena . . . . .	44.74 sq. m.	1013 ft.	479 ft.
Lake Bracciano . . . . .	22.45 „	548 „	525 „
Lake Albano . . . . .	2.35 „	961 „	557 „
Lake Nemi . . . . .	418 acres	1050 „	111 „
Lake Averno . . . . .	176 „	4 „	113 „

The water from these caldrons can only be carried off by overflow at the lowest point, or by an artificial outlet. The Bolsena and Bracciano lakes are of the former kind, Lago Bolsena sending its superfluous



LAGO DI NEMI

Among the Alban Mountains, taken from the eastern edge with a view of Genzano.

water to the sea by the Arrone and Lago Bracciano by the Fiume Marta. At Lake Averno, lying only 4 feet above the sea, the case of tufa containing it has been completely pierced. At Lakes Albano and Nemi, as well as the Lagi di Martignano and d'Agnano, difficult subterranean tunnels had to be cut in order to keep the surface stationary or to lower it. These excavations in the tufa rampart of the crater were constructed by the Romans; they went to decay in the Middle Ages, and have been improved or renovated in more recent times. The effluent of Lake Albano measures 1200 yards, that of Lake Nemi is 400 yards longer still, and is cut partly through solid lava. Beside these lakes there are mills turned by the superfluous

water as it flows off. The Lago d'Agnano, near Naples, has been almost entirely drained, only a small pool with radiating canals being left. The lake bottom is used as arable and meadow land.

A number of former lakes, such as this, have lost their water, which has either run off or degenerated into peat and alluvium. Among these are the Valle Aricciana and the Lago di Turno in the Alban Mountains, the Valle di Baccano, and the Lago di Stracciapappe, near Bracciano. As a rule there are no islands in these lakes, but lake Bolsena has two craggy islands of volcanic rock which are held to be remains of inner crater cones. They are called the islands of Martana and Bisentina.

The glacier lakes, embanked by moraines, form a second group, limited to the borders of the Alps. We may take the pool within the moraine rampart of Ivrea, as a type of these lakes. Then there are the Lakes of Viverone and San Giorgio, the lakes Erba and Varese lying between the Ticino and the Adda, besides the small collections of water in their neighbourhood. The section between the Adige and the Tagliamento is strikingly poor in these, owing perhaps to the smallness of the glaciers in the Eastern Alps. The chief lakes of the Lombard Alps are not pure moraine lakes, but are of tectonic origin. It is true that the level of these would not stand so high were it not for the ramparts of débris, but their depth reaching far below sea level can scarcely be explained by the action of ice and certainly not by simple damming up. These lakes, as has been already indicated, have been looked upon as remains of pliocene fiords, and many of the animals found there have tended to corroborate this view, although it is difficult to understand how these organisms can have survived in the completely frozen lakes of the glacial epoch, and we must not exclude the possibility of immigration from the Adriatic, or of introduction by seagulls or other aquatic birds. The valleys were doubtless formed first, so that, as in the case of Lake Como, we have to do with a true fissure, or as in that of Lago di Garda, with a trough. They have all certain qualities in common, an elongated shape of small breadth, considerable though varying depth, ramification and meandering into neighbouring valleys, and constant filling up by means of the influent rivers. The following table gives the altitude and depth of the larger lakes.—

	Area in Sq. m.	Height above the Sea in feet	Depth in feet
Lago d'Orta . . . . .	5'4	1220	820
Lago Maggiore . . . . .	82'6	646	2802
Lago di Lugano . . . . .	19'3	889	915
Lago di Como . . . . .	74'4	646	1929
Lago d'Iseo . . . . .	23'6	627	984
Lago di Garda . . . . .	191'4	154	abt. 980

All these, with the exception of the first, go down below the level of the sea, and Lago Maggiore is an unusually deep gully, reminding us indeed of a Norwegian fiord. Lake Garda is the lowest, but this exhibits at its southern end, which is considerably widened and girt by low banks, a depth of about 980 feet, a phenomenon all the more remarkable as it is just this section which has specially the character of a glacier embankment. Lakes Como and Maggiore, with a breadth of from 2 to 3 miles, are 30 and 37 miles in length respectively. The Lago d'Iseo is 15 miles long and  $2\frac{3}{4}$  miles broad on an average, while Lago d'Idro, high up in the range and seldom visited, is 6 miles long and only 5 furlongs broad. These blue waters among high mountains, clad with snow in the spring, and fringed by a vegetation of quite a southern character, are gems of landscape such as can hardly be matched in Europe for beauty and magnificence.

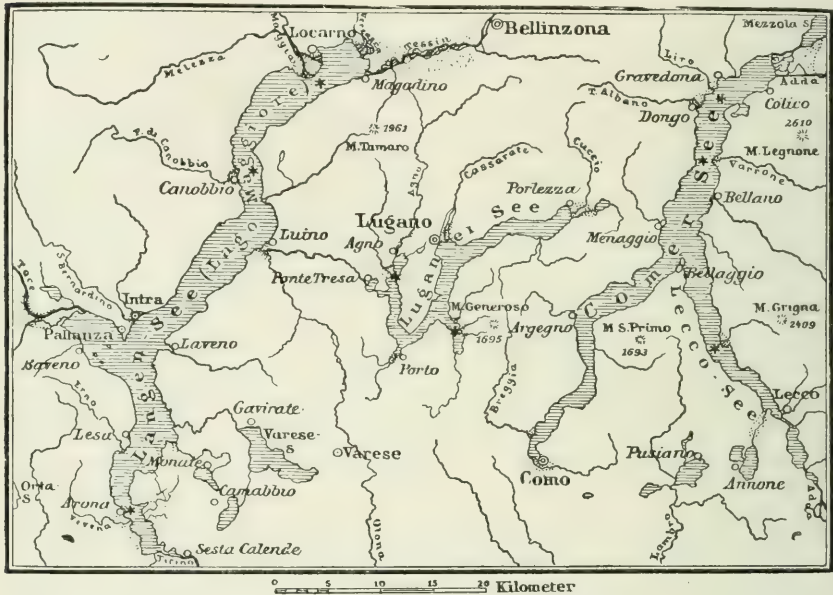
Just as the Po pushes out its delta into the Adriatic, the Tosa, the Ticino, the Adda, the Oglio, and other rivers push their débris into these lakes, with this difference, that there is no current to carry away the material, but all the coarse mud is applied to raising the lake bottom. It is only their great depth that has hitherto protected these channels from being choked up with the sand, but many parts are on the way to be clogged and filled up.

The upper part of Lago di Garda from Arco to Riva has already experienced this fate, and so has the head of Lago Maggiore, which lay originally further up the valley, and has been pushed southward by the alluvium of the Ticino. The Maggia has formed a broad delta in the lake near Locarno, the increase of which threatens to cut off the upper section of the lake unless by that time the Ticino also has pushed forward its mouth and filled up the whole channel. The arm of Pallanza is being gradually filled up by the Tosa, which has already shut off a piece of the lake called Lago di Mergozzo. The Adda, which flows laterally into the Lake of Como from the Valteline, has had a similar effect, forming the Lago di Mezzola, which the Mera, descending from the Splügen is slowly filling up. The meadowland near Colico thus produced by the Adda is, of course, marshy and unhealthy, and has had to be drained by canals. Other streams at Gravedona and Bellano have also their deltas, but there is no danger, owing to the depth of the lake, of its being strangulated or cut off at these places. On the other hand the Lecco arm is being closed up at its southern end in consequence of the deposit of peat and slime, partly also by the deepening of the bed of the Adda, so that between Lecco and Malgrate it has quite the character of a river.

Finally it must be mentioned that weak traces of ebb and flow are to be recognized in the larger lakes. The great importance of these

basins in the regulation of the discharge of water and thus in the industry and cultivation of the plain of Northern Italy need not be enlarged upon. It is only necessary to adduce as an example that the Ticino below the lake flows at the rate of 1450 cubic feet of water per second on an average, that when the river is very full this rises to 20,000 cubic feet, and that without the operation of Lago Maggiore in collecting and retaining the solid matter, the plain of the Po near Piacenza would be a marshy alluvial land like the delta of the same.

Lago d' Alleghe, a shallow collection of water in the valley of Agordo in the Belluno district, was formed by a landslip. We have



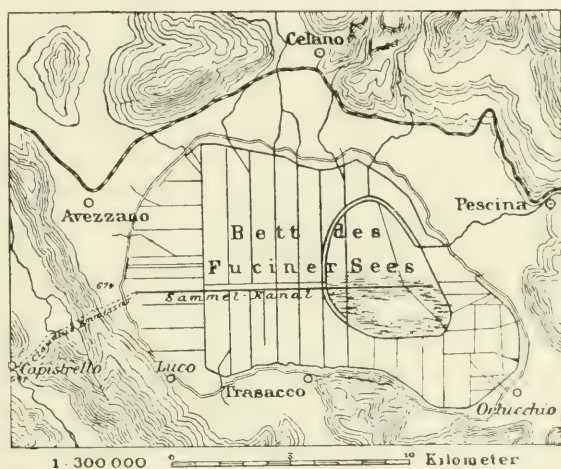
Deltas and Alluvial Deposits. \* Places of possible strangulation of the lake by Deltas.

SKETCH MAP OF THE LAKES OF LOMBARDY.

met before, in the Velino valley, below Rieti, with lakes formed by dams of sediment, and there are other examples in the Chiana lakes near Chiusi and Montepulciano, and the great basin of Lake Thrasimene in Tuscany. This last, at an altitude of 826 feet, and quite shallow, being only 20 feet deep, is imbedded in alluvium, which by interrupting the flow of water to the Tiber, is the cause of its present extent, for in ancient times it is said to have been smaller. Its depth is slowly diminishing and a beginning has been made of reducing its extent by a ditch to the Tiber, in the same way as the water of the Fucine Lake, near Avezzano, has been drawn off.

There are in the Apennines, in consequence of convolutions of the

ground, troughs and elevated plateaux or basins which are either drained with difficulty or are without visible effluent. The plateau of the Fucine Lake, near Celano and Avezzano, in the range to the east of Rome, may be adduced as a type of these. The streamlets that trickle down from the surrounding heights collect in the bottom of the valley, and as there is absolutely no outlet, produce a lake, the exhalations from which infected the neighbourhood, even in ancient times. As only a narrow chain separates the basin from the valley of the Liri, and the bottom of the lake lies at a greater altitude than this valley, the Emperor Claudius had an effluent of over three miles in length carried under the mountains, which took eleven years to construct and was completed in A.D. 52. This work fell into decay in the Middle Ages, and it was not till 1862 that Prince Torlonia, after many attempts and the expenditure of 30,000,000 of francs, widened and lengthened the canal, and made it efficient. The construction was completed in 1875, and the lake was reduced to a small residue, 36,000 acres of arable land being reclaimed, and the surroundings became more salubrious.



SKETCH MAP OF THE FUCINE LAKE ON THE ELEVATED PLATEAU OF THE ABRUZZI.

At other places, where there was a more plentiful supply of water, this made an outlet for itself, making its way to the lowest point and furrowing out a passage by erosion. In this way the Val di Diano has been drained, the Tanagra having cut itself a deep gorge in the limestone bar at the northern end, near Polla, so deep and narrow that the river disappears from the surface and flows apparently in a subterranean excavation. The neighbouring village is called Pertosa in consequence. But even now the water is dammed up in spring, and the former lake bottom with its débris, travertine and peat, is always moist and has the underground water very near the surface. This could easily be reduced to a lower level by blasting or canals at the place where the Tanagra breaks through. Just in the same way the river Mengardo

has worn an inaccessible gorge some miles in length, called Il Tirone, in the limestone mountain from which it only issues when close to its mouth. The basin of Muro Lucano and the gorge of the Platano, the Gola di Romagnano, have been emptied by similar natural processes. The same thing is found in a less degree at the Lago di Pignola near Potenza, in which the gully is not wide enough to prevent a lake from being formed there at times in rainy winters.

Besides this surface system of rivers and lakes we have in many parts of the country, especially in Southern Italy, a subterranean system which in the Terra d'Otranto, completely balances the former. It is frequently seen that owing to the quantity of débris or loose permeable volcanic tufa on the slopes, the brooks of the upper valleys trickle away in the middle of their course into these loose masses and only crop up again lower down as good-sized springs. These waters rising from the earth have been mentioned in speaking of the plain of Pisa. They occur in all the tufa-filled valleys opening into Campania, as for example the valleys of Nola, in the broad section called the Caudine defiles near Arienzo, where these waters form the marshes of Cancelli and Acerra, and are then, together with the waters of the northern slope of Vesuvius, carried to the sea in a wide circuit by the canal of the Regi Lagni. The Sabato, a tributary of the Calore, comes from springs which rise suddenly from the débris near Avellino, and of these there are an astonishing number, while the valley higher up has no water except after a fall of rain.

Between Naples and Salerno the mountain streams sink into the earth, in the ravine of Cava in such a manner that it is only in rainy weather that water reaches the plain through the canal of Nocera. The vanished water slowly flows off among the masses of débris or on the surfaces of the strata of the solid limestone. Thus it occasionally meets with rifts or clefs which offer an easier way, and this it pursues. In the ravine of La Cava these clefs exist in great number and convey the water underground through the Nocera-Codola chain to Campania, where it again makes its way to the surface in numerous little rills and a few streams of more importance. It is from these plentiful springs that the Sarno draws its water, and that the useful building stone, the Sarno Travertine was precipitated. In Tuscany also examples of this water circulation in the limestone are not wanting—at Sorgente Pollaccia, in the Apuanic Alps, for instance, as is shown by the vast beds of tufa in the Chiana valley. To these must be added the Anapo near Syracuse, which derives its water from the porous pliocene limestone rocks of the neighbouring heights.

But Southern Italy is after all the place where all conditions for this kind of watercourse are presented in the highest degree owing to the vast blocks of triadic dolomite and the elevated surface of cretaceous and jurassic limestones. East of Salerno and south of the upper Ofanto extends the vast mass of Cervicoalto, covered with deep snow in winter and by dense uniform green forests of beech in summer. It contains a series of elevated plains or troughs destitute of effluents (Lago d'Acina), and is traversed by numberless clefts and rifts so that at the time of the melting of the snows it becomes saturated, and parts with its water again very slowly. This water unites with internal springs and comes out at Caposele as the River Sele. The flow is reckoned at 250 cubic feet a second, besides a number of other streams with a flow of from 30 to 100 cubic feet per second, and others again emerge as considerable streams on the northern slope of the mountain near Montella.

This water trickling through the limestone and charged with carbonic acid produces caverns and grottoes, for example the sacred grotto of Monsummano in Tuscany, the caves of Amalfi, la Cava and Capri. The falling in of cavities of this kind gives rise to local earthquakes, and if the part broken in is near the surface forms sinks and dolinas. The Terra d'Otranto has a great many of these as nearly all the water sinks into the ground, flowing away underground near the surface owing to the small elevation of the land. These funnels, called locally *vore* or *gore*, are arranged in groups or rows; they are often so steep that it is impossible to climb down them, and are of varying depth and breadth. There is a group of these dolinas between Ostuni and Fasano, the largest of which, called Grava delle Ciole (Jackdaw Glen), is 60 feet deep and 30 feet across. Other groups are to be found in the neighbourhood of Martano, Galatone and Capo di Leuca, and these have in many cases given rise to the names of the adjacent towns, as Locorotonda, Cisternino, Grottafaccie.

These waters flow into the Adriatic Sea immediately or after a short course above ground as in the Karst, while the river beds above are almost always dry, and owing to the absence of surface water do not develop a real system of rivers. At the same time there is no want of the residuary product of the solution of the limestone, the red earth (*terra rossa*, locally called *bollo*). Here and there it stops up the holes at the bottom of the dolinas, preventing the rain water from running off by its impermeability and thus bringing



SOURCE OF THE  
RIVER SELE NEAR  
CAPOSELE, WITH THE  
MILLS.

about local inundations. Where it forms the only covering of the slopes it produces a barren soil, sometimes muddy, sometimes full of cracks and hard as stone, producing only grasses and scanty meadow-weeds. In short the Terra d'Otranto is closely related to the lands on the other side of the Adriatic in the resemblance of its general structure to the Karst as well as in its origin and history.

The Amenano near Catania holds a special position, as its course below ground seems bound up with that of a stream of lava in such a way that a part of the rain falling on Etna as it sinks in the *rapilli* collects at this solid dam, which indicates the limit of depth, and at the end of this issues a stream of small length but with a tolerably strong current, the ancient Amenanus.

In connexion with this hydrography we may add a few words concerning aqueducts, ancient and modern. One of the principal duties of the magistrates of ancient Rome was to supply the city with good drinking water as the water of the Tiber was not clean and that from the wells was not wholesome. Accordingly they made eight aqueducts on the left bank of the Tiber (Aqua Appia, Anio Vetus, Claudia, Tepula, Marcia, Julia, Anio Novus, Virgo), and two on the right bank (Aqua Trajana and Alsetina) which brought the necessary element to the gigantic city from a great distance on huge arches, and according to a statistical statement of the fourth century, supplied 11 thermæ, 856 bathrooms and 1352 street fountains. The Romans were masters in hydraulics, though indeed only as pupils of the Orientals, and carried their knowledge of the art into all parts of the empire, bequeathing it in some measure to the Italians of the present day. In ancient times the water was brought from the Anio (Aqua Marcia), from the Alban Mountains (Aqua Claudia), and some of these aqueducts (Aqua Paola and Virgo) have been restored in modern times. They supply 90 gallons per head of the population daily.

The Neapolitan aqueduct (Aquadotto di Serino), opened in 1885, is an equally magnificent work ; it brings to this town the pure clear water of the Sabato from a distance of 25 miles as the crow flies. The springs of the elevated valley near Serino are led from Avellino on the western declivity of Monte Vergine, then in a tunnel through the chain on the borders of Campania and along a spur of the same, the ridge of Cancelli to the plain, on the watershed of this at the northern foot of the hill of Camaldoli and following this to the highest portions of the City of Naples, where the water is distributed by its own pressure into the network of waterpipes.

A still grander work was taken in hand ten years ago. This is the supply of water to Apulia and the harbours on the Apulian coast.

As these places suffer terribly from drought in summer, and their productiveness is thereby impaired, and as the harbours are dependent on the most abominable well water and are consequently unhealthy, it is intended to store up in a number of reservoirs the superfluous water of the Ofanto in the spring, and to let it down gradually to the low country by means of a system of canals ramifying in the plain.

It is hoped that by this irrigation the crops will be doubled and the harbours made healthy, and that by the damming up of the water in reservoirs the periodical floods will be checked. But the whole of the water of the Ofanto district would not suffice for the extensive area to be supplied, and so it is proposed to apply to this end the springs of the Sele lying at an altitude of 1482 feet above the sea on the Tyrrhenian side of the mountains and to abstract from the river at Caposele an amount of water of from 100 to 175 cubic feet per second by means of a tunnel under the watershed. The expense of the work would thus be enhanced to an extraordinary degree, and it is difficult to see how the water rights of the Sele can be sequestrated without a special act and heavy compensation. The undertaking is very likely to be wrecked by these difficulties and by the want of native capital.

To conclude, there are certain of the Italian islands where streams are entirely wanting and the inhabitants are dependent on rain water collected in cisterns. Among these are the Lipari Isles, Lampedusa and Pantelleria. On this last there is such a deficiency of water, as it does not rain all the summer, that the inhabitants are compelled to hang brushwood over the *fumarole* and thus condense the steam and convert it into liquid. There is great privation when the rain does not fill the cisterns or when, as in 1891, earthquakes crack the cisterns and spill the contents, for the water has then to be brought from the mainland in ships, there being no apparatus for distillation, and if there were it could not be kept going on account of the high price of fuel.

## CHAPTER VIII

### Plants and Animals

NEXT to the blue sky and the picturesque grey rocks the traveller from the North is delighted at the vegetation with its characteristic traits, differing in many respects from those of Germany. When one enters Italy by the Brenner Pass one is entranced on reaching Verona by the row of cypresses, 100 feet high, at the Villa Giusti, and with the figs and lemons at Lake Garda. In Lago Maggiore at the end of the St. Gothard Pass the Borromean Islands exhibit numerous southern types in their luxuriant vegetation. Along the Riviera the first palms are seen growing in the open air, in Central Italy we get laurel bushes and olive plantations; citrons, oranges and almonds flourish near Naples, and finally in Sicily, in the gardens of Palermo, Syracuse and Messina, palms, Senegal gums, carob trees, mimosas and agaves attain their full beauty as in their original homes. For many of the useful plants of Italy, and many of those which give character to the landscape, were imported by the ancients from abroad. These came from Asia Minor, Africa and America, and were introduced by the Arabs or the Spaniards. They became acclimatized and replaced the native types just as the American Weymouth pine is beginning to supplant the fir in Germany.

The Apennine range forms the boundary for most of the subtropical plants; they are confined to the region of winter rains and cannot withstand any continuance of frost. Where they do grow further to the north, as in the case of the lemon plantations of Lake Garda, they require special attention and careful protection against the cold. Palms grow in the open air in the Riviera, but they produce a somewhat mournful effect as if they were only partly developed as compared with Sicilian specimens. The olive, indeed, bears fruit in Tuscany, but the yield, as that of the lemon and orange trees in Sicily, is not large. The same holds of the Indian fig and the carob tree, pods of which serve as fodder for horses.

Among the trees those which most strike the eye are the cypresses in Northern Italy and the stone pines in Central and Southern Italy. The cypress (*Cupressus sempervirens*) is a stiff monotonous tree; standing alone it produces a picturesque effect in the landscape by its slender shape and dark colouring, but in avenues or denser plantations it is as wanting in beauty as our poplars. The cypress is essentially an ornamental tree, growing in gardens and in churchyards; its wood

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has some utility, its fruit none. In this it is inferior to the stone pine (*Pinus pinca*) whose cones contain a quantity of almond-like seeds tasting like pistachio nuts, and which is consequently cultivated everywhere in Southern Italy. The stone pine has generally the characteristic umbrella shape ; this, however, is not proper to the tree but is produced artificially by cutting (see illustration facing p. 117). To increase the harvest, and at the same time to obtain wood, the lower branches are sawn off ; the trees too are planted between the fields, where they offer protection against the sun without casting too heavy a shadow. Trees mutilated in this way may be seen right and left all along the road in riding through Campania towards Rome. These are in such numbers and their crowns are so stunted in development that they are not less ugly than cypresses. The large shining cones or fir-apples were symbols of immortality in ancient times, and on this account a gigantic fir cone used to crown the mausoleum of Hadrian ; it is still preserved and set up in one of the courtyards of the Vatican. The stone pine was sacred to Bacchus, and the thyrsus which was brandished at the feast of the god was a staff wound round with vine-leaves and terminated by a fir cone. Stone pines are not often found as forest trees, but near Ravenna, the ancient forest *la Pineta*, sung by Dante, Boccaccio, and others, is said to have consisted of these trees. This forest is mentioned in the earliest writings of the Middle Ages, but twenty years ago it suffered considerable damage from frosts and forest fires.

Among other conifers the principal place is held by the pinaster (*Pinus maritima*). This forms extensive plantations on the dunes on the coast near Pisa and renders important service in solidifying the quicksands. The Sila mountains also contain woods of pine and fir, scarcely to be met with elsewhere in Italy. Lastly, fir woods are to be met with on the northern slope of Etna ; here the larch (*Pinus laricio*) predominates. These trees fill part of a forest tract reaching up to the height of 6000 feet on the cone of Monte Etna ; they are not, however, packed densely together, but stand in detached groups, and thus are able to develop freely. In many places streams of lava have broken through this girdle of forest and when the lava touches them, or even before reaching them, they are set on fire and burn like a row of huge torches. These woodlands of Etna, consisting above of conifers and lower down of deciduous trees (beeches, oaks, chestnuts), occupied a far wider area in earlier times and are slowly approaching extinction, to the great injury of the surrounding country.

The country in general is poor in forests. They have completely disappeared in the lower cultivated districts, while on the declivities of the mountains only miserable underwood of hazel, ash or chestnut

is allowed to grow, and this is cut down to the ground every ten or fifteen years. Real forests are only to be found on remote plateaux, and these consist of beeches or oaks. The beech flourishes excellently on the heights of the mountain ridges between Salerno and Potenza in Southern Italy, covered as they are with snow in winter, and here they form regular mountain woods with a carpet of moss quite recalling the German beech groves of the Baltic coast. This tree requires a chalky soil and is unable to withstand great heat, for which reasons it does not grow on the lower ground. Some of the oaks are of the evergreen species (*Quercus ilex*) and some of the species have deciduous foliage (*Q. pubescens*, *cerris*, *ruber*). Oak woods with big knotty trees, freely developed and often of great age, are scattered over the whole country, and many places bear the designation *cerreto* from the evergreen oaks which either exist there at present or did so in former times. The groves in the Sabine and Alban mountains so often represented by painters on account of their splendid trunks, are well known. Forests in the ordinary sense are only formed in the Apennines, as for instance at Vulture, in the Sila, on the Gran Sasso and in the Abruzzi. The acorns are used as pigmast and are also sought after with avidity by wild boars.

Among other deciduous trees the plane, the maple and the Spanish chestnut (*Castanea vesca*) occur frequently. The last appears on the mountain slopes as dense underwood, and in Northern Italy it is occasionally seen in continuous forests (as at S. Remo) or in splendid trees standing alone such as the *Castagno dei centi cavalli* on Etna, under which a hundred horsemen can stand at once. The sweet chestnut grows from the Southern Alps to Sicily and it even flourishes on sunny slopes of the plain of the Upper Rhine. On the other hand it does not climb the heights of the Apennines, and it is only in sub-tropical Sicily that it shares in the composition of the elevated woodlands.

The laurel (*Laurus nobilis*) is another characteristic Italian tree. It runs wild in the valleys of South Tyrol and extends thence to Sicily, a laurel wood in that island having been mentioned, it is said, by Homer. These trees, or more properly shrubs, are evergreen and contain in the leaves as well as the seeds, a strongly aromatic oil (oil of bays) which is obtained from the fruit by pressure and forms an article of trade.

The willow is of importance, as it is much planted in Northern and Central Italy to form the material for the wickerwork of Verona and Modena. The bast, falsely called straw, is detached and worked up in great quantities. In Calabria and Sicily there is the flowering ash (*Ornus europæa*<sup>1</sup>) which is cultivated in special plantations for the

<sup>1</sup> The Calabrian flowering ash (*O. rotundifolia*) yields even more manna.

manna. This is the hardened sap ; it flows from incisions in the bark and is used in medicine. Finally the blossoms of the pomegranate and the arbutus are pleasing, and so is the elegant foliage of the myrtle, which together with the oleander covers the river banks and hillsides with dense underwood.

In recent times the Australian eucalyptus has been much planted in the lowlands, especially in marshy districts. These plants grow quickly ; they draw an immense quantity of moisture from the ground and are said to act beneficially on fever districts. They also supply a bitter substance which acts like quinine, being a febrifuge and applicable to the composition of a whole series of medicaments. In the Pontine marshes near Rome, in the Campagna and in the Simeto valley near Catania these slender lofty trees with their glaucous narrow leaves and peculiar yellowish-white blossoms are often met with.

Another useful plant is the mulberry (*Morus alba*), the leaves of which are used in rearing silkworms. It grows in the orchards in the silk-producing districts. It can withstand a certain amount of cold, so that it flourishes in the plains of Lombardy, where a quantity of raw silk is raised for the supply of the silk industry of Milan.

The poplar, the ash, and the elm are generally distributed. Poplars are planted in rows between the fields in Campania, and are cut in such a manner as only to allow a slender bunch of twigs like a switch to grow upwards. The strong trunks and the bent-down lower branches serve to support the tendrils of the vines planted between the trees, so that the several trees seem grown over with vineleaves or to be supporting a wall of vines between them. The elm is much used for fuel and makes excellent charcoal ; its foliage serves for litter and manure.

Numerous lemon and orange gardens cover the low lying parts of Sicily and Calabria ; the dark foliage, the white blossoms and the yellow or reddish yellow fruit hanging by hundreds to the blossoming trees afford a charming sight and one eminently characteristic of Southern Europe.

The orange comes from China and was originally introduced into Europe by the Portuguese, for which reason oranges are called in Italy *Portogalli*, the smaller fruit being called mandarines. Splendid orange and lemon gardens lie in the plain of Sorrento, in the Crater of Lake Averno near Naples, in the Conca d'Oro, i.e. the valleys and basins near Palermo, near Messina and around Etna. At the time of flowering a delicious perfume prevails, which is carried far by the wind, and the whole plant is permeated with fragrant aromatic oil. In Northern Italy, on the Garda Lake near Sarro and Gardone, and in the Trentino the fruit does not fully ripen ; this, however, does no harm as they are sent away unripe to mature on the way. These species of citrus

are evergreen, the fig (*Ficus carica*) on the other hand sheds its broad five-fingered leaves in the autumn to cover itself anew in early spring (March) with its quick-growing foliage. In the winter it stretches its light grey branches into the air naked but for an unripe fig here and there.

Side by side with the fig grow the almond and peach trees. These bloom near Naples at the end of February or the beginning of March, and at that time a walk through the garden-like cultivated land of the Phlegræan Fields or a drive on the heights of the Vomero and Posillipo is absolutely bewitching; the almond trees (*Amygdalus communis*) are covered thickly, before the foliage comes, with light rose-coloured blossoms, while the peaches display a somewhat more lively red and the cherry trees are white. All three are the gift of the East and have their original home in Asia Minor and Armenia, whence the Romans brought them into Italy. Lucullus is said to have brought in the cherry tree, which in 120 years spread over the whole of the Western Empire.

The olive (*Olea europæa*) is an unattractive tree with a grey bark. It has pointed leaves of a clouded green above and dusty white underneath, and oval fruit, a finger-joint in length, green, brown or red. It is found from the Southern Alps (Gagnano on Lake Garda and Como) onwards on the lower slopes along the Tyrrhenian lowlands and valleys to Calabria, it covers wide areas in the Capitanata and Murgia as well as in the Terra d'Otranto, and it is *par excellence* the tree of the Sicilian plain. Without the olive the impression made by Italy would be one of greater nakedness and sterility. It grows well on parched and stony slopes, and forms the characteristic belt of greyish green that skirts the foot of the mountain chains in Southern Italy. Many towns are named after the olive, such as Oliveto, Olevano, etc., and the olive is one of the most profitable objects of culture. It is planted with small spaces between the several trees so that the summits have free development and the sun has access to them. The original shape is that of a bush with prickly branches occurring in hedges and thickets, and it is only converted into a tree by the influence of cultivation, the cultivated olive often reverting to its original shape. When it attains a certain size the olive raises itself out of the ground on its roots, so that old trees seem to stand on a radiating scaffold. Its vitality is often astonishing, almost dead trunks and knobs or branches nearly torn off pushing out vigorous shoots, as is also its length of life, for there are olive trees many hundreds of years old which still bear good crops. Old trunks of this kind have a remarkably bent and distorted appearance, which makes them favourite objects in landscape paintings.

We shall have to come back to the olive tree later when speaking





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of the produce of the country, and we shall then also describe in detail the cultivation of the vine. Let it suffice here to say that all the lower slopes which are not covered with corn or olive trees are almost invariably planted with vines. The grape extends its foliage from tree to tree, so that Campania, the mountain range round Monte Vulture and the foot of Etna resemble gigantic vineyards, bare in winter, covered with dense foliage in summer, and hung with innumerable bunches of dark grapes in the autumn.



OLIVE AND AGAVE

The wildflowers of Italy are glorious. Anyone who wanders in the mountains in spring, say April or May, or climbs Cape Misenum, near Naples, in March, will ever remember with delight the anemones, violets and narcissi which clothed the ground like a many coloured carpet. The gracefully drooping heads of the narcissus peer up in thousands above the grass and the violets diffuse a truly astonishing fragrance of which it is almost impossible to form a conception.

Among the Caudine passes regular clouds of fragrance of the violet pour down from the wooded heights, and wherever one looks or treads

the deep blue colour shines out from the fresh grass. March is the special violet month, the commencement of spring. Then the Roman Campagna is decked with countless flowers of varied hue and looks like one gigantic meadow. Then Sicily grows green and the gentian springs up on the Alpine pastures. In summer the land is parched, the grass on the Campagna is burned up, the Sicilian fields are cleared of their harvests and look barren, besides being furrowed by the deep cracks caused by the heat. After the first autumn rain the vegetation near Rome awakes to new life and enjoys a second though inferior spring in the greenness of the grass and the blossoming of numbers of field flowers.

The coming of winter is very marked even in Southern Italy. Vines, olives, figs, maples, planes, elms, chestnuts, walnuts, and other trees shed their leaves and are bare. There is not much change to be noticed in the evergreens. Stone pines, cypresses, laurels, orange trees are indeed always in leaf. The last, however, are usually covered up in the winter and the laurels are stripped, so that the green of the foliage passes inevitably into a dull grey, and only in pleasure grounds and parks does careful attention make the coming of winter less felt. In these grounds palms, cycads, and holm oaks are green, while the flowers planted out from hothouses continue to blossom beneath the rays of the winter sun, and outside in the fields the grass is mingled with some species of daisy, potentilla and ranunculus somewhat as in Northern Germany at the beginning of March. The expression that Italy enjoys an eternal spring is false ; one might say with more truth in the case of Sicily that it has two winters, one rainy and the other hot.

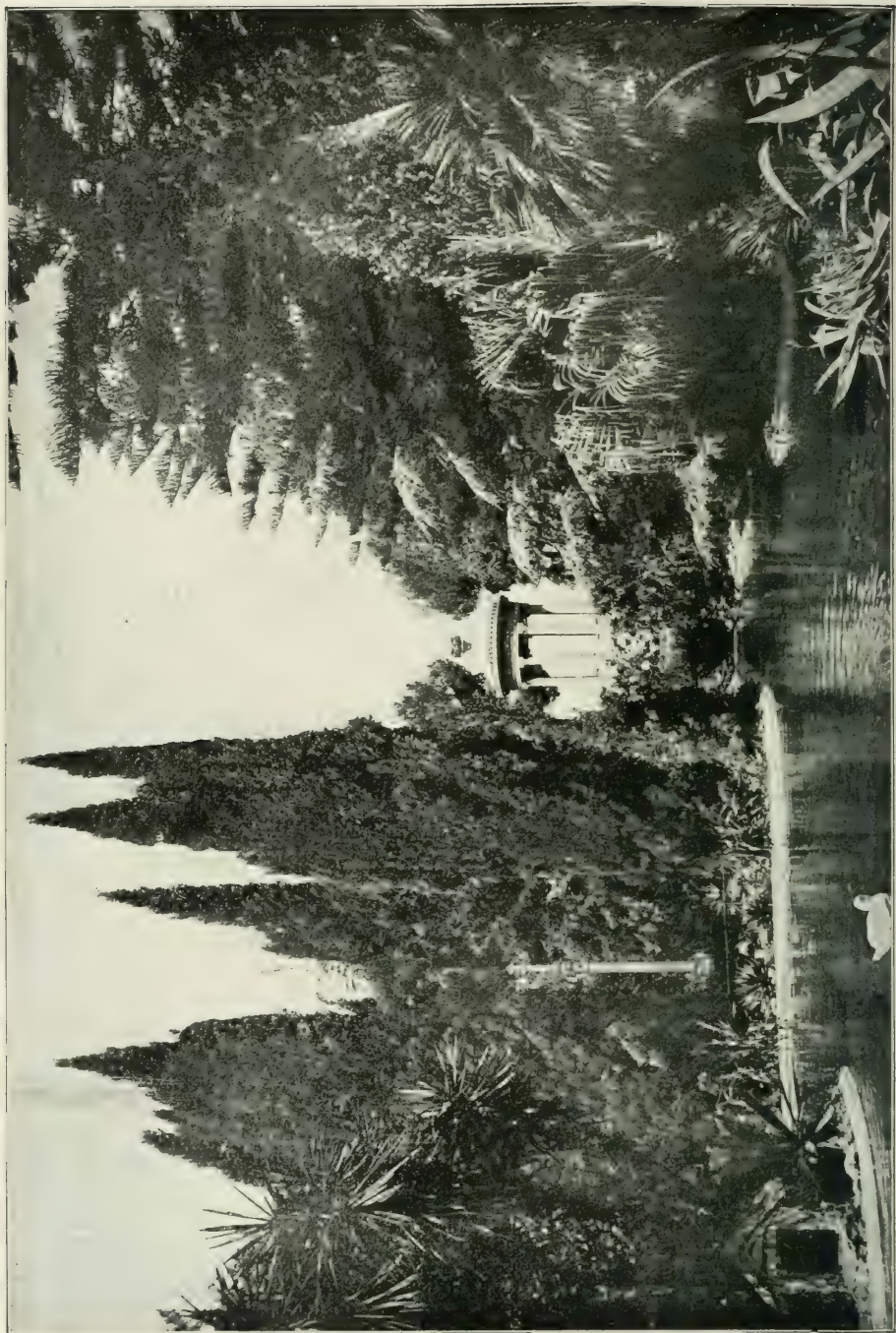
Even if Italy does possess many green trees in the cold season it has to thank for it the foreign evergreens which have become acclimatized there. The palms with their great fronds have all with one exception been introduced. The Italian dwarf palm (*Chamærops humilis*) is a scanty low prickly shrub growing on the otherwise bare rocks of Liguria and Sicily, of which the fibres and bast are of use in many kinds of basketwork. The lofty fan palms, date palms and cocoanut palms are only scantily developed in the north, and there only under the mild sky of Liguria ; they only begin to have their proper growth in the African air of Sicily, while even there they do not bear fruit. The sago palms (*Cycas*) are garden plants which occasionally look well in the middle of a bed, but as a rule produce a stiff impression, their staring leaves looking as if they were made of varnished pasteboard. The yucca and the casuarinas, of which, however, there are but few, are wonderful plants and so are the numerous species of the cactus and the agaves spotted with yellow or green. The last two



PALMS AND CYCADS IN THE VILLA TOSCA NEAR PALERMO.







CYPRESSES, ARAUCARIAS AND YUCCAS IN THE VILLA TOSCA, NEAR PALERMO.

were imported from South America and soon greedily seized upon all unoccupied localities in Italy.

Among cacti there is the prickly pear (*Opuntia vulgaris*). The stem of this plant consists of broad, flat, handshaped portions, at first fleshy and then woody, at the edges of which the flowers, and later on the fruit, come forth. The thorns or prickles are collected in small fascicles. The ripe fruit, known as Indian figs, are eaten in autumn in great numbers, and are also used as food for pigs. The number of these plants can be increased at pleasure, as one has only to set a portion of one of them in a piece of barren ground for it to grow. These opuntias consequently form thick hedges on heaps of refuse, detritus, or stones in the Sicilian fields. The fruit is oval, about the length of the finger, juicy, sweet and of a mild flavour, but requires to be peeled with care on account of the number of tiny prickles with which it is covered, as these sometimes cause unpleasant gatherings on the hands.

The agave (*Agave americana*), often wrongly called aloë, grows chiefly by roadsides and in barren ground; it is used for fences and enclosures, and is said to have been domiciled in Europe since 1561. Its most northerly point is Bozen, where it is still found wild; it cannot withstand a hard frost on account of the quantity of water in its thick fleshy leaves. These stiff leaves, often an inch and a half thick at the base and some three feet in length, display all kinds of bright or dark spots in the different cultivated varieties, while the wild specimens are covered with a grey waxy dust, through which the fresh juicy green can be perceived. After a long period of growth the agave puts forth a flowering stem nine to twelve feet high, with white or yellow blossoms, which attains its full height in a few days, helped by the supply of nourishment and water stored up in the leaves, so that it can, as it were, be seen to grow. As soon as the small fruit has ripened the whole plant dies down, but generally new buds are already in process of shooting up from the base, which in the mutual struggle for air and light are developed into a prickly hedge very difficult to get through.

Lastly, there are spread over barren soils the different species of acanthus and spurge, both pretty but troublesome weeds, distasteful to cattle. They are only saved from being exterminated by the laziness of the inhabitants. The spurges reach the height of over a foot and a half, with six to ten strong shoots; they are absent from no part of Italy. The acanthus (*A. mollis*) with its sinuate and dentate leaves grows on rocky slopes and ruins which it covers densely in the spring, side by side with anemones and violets—as for example the site of the town and the floor of the temple of Pæstum. It is well known that

the leaf of the acanthus is said to be the origin of the capital of the Corinthian column.<sup>1</sup>

On the mountain tops these weeds are replaced by the gorse and the broom (*Genista hispanica* and *Sarothamnus vulgaris*), whose twigs are used for besoms or for lighting fires, but which are on the whole troublesome weeds, and are shunned even by sheep and goats owing to the purgative cytizin they contain.

Looking at the country as a whole, from the Alps to Sicily, the eye is chiefly struck with the green colour as its leading characteristic. Only the highest summits are barren, some 13 per cent. of the whole, while all the rest is subjected to a more or less careful cultivation. There is an almost entire absence of heath country, with its monotonous dreary character, as well as of fens and moors; Italy has instead the limestone cliffs rising above the soft green of the lowlands and valleys, with their strange shapes and silver grey tones, and set with various plants and grasses, dwarf palms and lilies.

Italy presents little that is characteristic in the Animal World. The rich fauna of the pliocene era, elephants, rhinoceroses, lions, hyenas, had died out at the beginning of the quaternary period, and could not be replaced from the South owing to the breaking down of the bridge from Africa to Sicily.

The larger beasts of prey, such as the bear and the wolf, are at present nearly extinct. The bear was still tolerably common in the Apennines during Roman times, but is now limited to solitary individuals in the Upper Alps. The wolf played quite an important part in ancient poetry, and even Horace tells us how when wandering alone in the mountains he met one of these animals, which, however, dared not attack the God-protected poet. It is now only in the thickets of the mountain plateaux and ridges of the Basilicata that a few packs are to be found; these are dangerous to the sheep pastured there, and occasionally during a long period of snow they make their way into the neighbourhood of the villages and attack a single traveller on foot or a post cart. The shepherds' dogs wear broad collars with spikes an inch long as a protection against wolves, as the throat is the first part attacked, and it is curious that the dog in the Mosaic at the door of the Pompeian house, the "*cave canem*" has a similar collar. There are in all about fifteen to twenty wolves shot yearly in the Basilicata, and killing one of these is considered a piece of good fortune, as it brings in a reward in addition to the valuable skin. The sheepdogs of this district have a good deal of the wolf in them, and seem to have sprung from crossing the wolf with the domestic dog; they are fierce

<sup>1</sup> This is now believed to have been taken from *A. spinosus*, as *A. mollis* is not found in Greece or Asia Minor. (Trans.)

and dangerous animals, generally white in colour and with long shaggy hair. A she-wolf was the sacred symbol of ancient Rome, as the founders of the city were said to have been suckled by one. In memory of this a pair of these animals are still always kept at the capitol.

The common dolphin, or hogfish (*Delphinus delphis*), is a good friend to the fisherman and the mariner. In fine weather it plays around the prow of a ship and often accompanies the vessel for a long time, sometimes rushing forward, then returning, describing great circles with marvellous agility, now lying on its back, now leaping up over the surface of the sea. The Greeks and Romans made countless representations of it ; it is glorified in the myth of Arion ; it is found on the coinage of Syracuse, on which four dolphins surround the head of Arethusa, and on that of Tarentum they are the supporters of Tara, the founder of the city. It was sacred to the Dioscuri, and as dolphins are not to be seen in stormy weather, their appearance served as a token of a calm sea and a good passage.

The birds are the same as those of Central Europe, though a great number of singing birds are only seen in Italy on their flight as birds of passage. The woods are silent and devoid of song, partly because every bird that can be eaten is ruthlessly shot, and partly because they do not build in Italy, and consequently the incitement to sing is wanting. Larks, thrushes, blackbirds, quails pass over the country in spring and autumn in large flights and are killed for eating. Dense flocks of pigeons live in the lonely woods of the mountains ; their cooing and the cry of the jay are often the only sounds that break the deep silence of the beech forests. Tame pigeons are found everywhere. In some places they have become wild again, as at Monte San Giuliano, near Trapani, or on the Church of St. Mark at Venice ; but their numbers, amounting to several hundreds, are only maintained by food given as charity.

The stock of birds is considerably lessened by buzzards, kites and falcons, which build in the mountains and are little shot, as they are of no use. Ten to twelve birds of prey may occasionally be seen describing their circles in the sky at the same time, and they are even said to attack the lambs and to fight fierce battles with the dogs.

Among reptiles the most important are the lizards. In warm weather these emerge from the ground everywhere and lie in numbers on the scorching ledges or stones, whence they disappear nimbly at the approach of danger. Generally it is *Lacerta muralis*, the smooth brown wall-lizard, the large green species, *L. viridis*, occurring less frequently. A remarkable blue variety of the former lives on the Faraglioni, isolated crags near Capri, which counts as a zoological

variety, being very difficult to catch on these almost inaccessible rocks. Of snakes we have the viper (*Vipera ammodytes*), whose bite may be really dangerous. Of turtles there is a pelagic form in the sea, the hawk's-bill turtle (*Thalassochelys caretta*), the horny, transparent, beautifully coloured plates of its armour being the tortoiseshell of commerce.

Fishes are, of course, more largely represented by marine than by river or lake species. Among the latter we have only to mention the eel and a few small trout; trout are found in mountain streams, and are looked upon as rare and costly food, eels live chiefly in the Po district; they make their way in shoals when young into the shore lagoons and are taken later on, the table being adorned with eels at Christmas in Italy as they are with carp in Germany. In the sea there are a number of useful fish, pleasing even to foreigners; the people of Southern Italy eat everything that lives in the sea, and they call this conglomeration of fish, mussels, sea urchins and crabs *frutta di mare*, sea fruit.

Among fish may be mentioned the dentex (*Dentex vulgaris*), the hake (*Merluccius vulgaris*), the gurnard (five or six species of Triglia), the mullet (*Mugil cephalos* and *M. capito*), then the muræna (*Muræna helenæ*, murina in dialect), a voracious eel-like fish living in holes, which was held in high repute by the Romans, the story telling us that they were fed and fattened up at Baïæ with the flesh of slaves. Then there is the electric ray (*Torpedo oculata*), noted for its electric charge, which serves as a weapon of defence. We shall speak of the tunny, the sardine, and the anchovy under the head of fishery. The sea horse (*Hippocampus longirostris*) lives in the seaweed, and the lancet (*Amphioxus lanceolatus*), renowned as the original type of the *vertebrata*, in the sand on the shore. Isolated specimens of the white shark have appeared in the Mediterranean, near Venice and Leghorn; this is the rapid voracious shark of the Red Sea and Indian Ocean. It is said to have migrated through the Suez Canal, following the ships in quest of kitchen refuse, and not to be rare in the harbours of Syria. If it increases in number it may become dangerous to bathers, but it is easy to catch and destroy, thanks to its greediness.

Lobsters (*Homarus vulgaris*), spiny lobsters (*Palinurus vulgaris*), crabs and hermit crabs, are widely distributed. Many of them are eatable. The hermit crab is interesting; this inhabits the shell of a univalve mollusc, on which settle one or more sea anemones, travelling about with it in order more easily to entrap their prey. Its guests afford it an excellent defence with their stinging organs. Other crabs cover their backs with a small plantation of algæ, others again carry about empty shells attached to the last pair of legs. These crabs were

so well known to the ancients that the Akragantines put them on their coinage and represented them so well that we can determine what species served as model—it was *Eriphia spinifrons*.

Among the other Articulata we must name the cicadas, whose males utter their chirping song in warm summer nights throughout Central and Southern Italy, the glowworms which are to be seen in thousands and cause a charming illumination of the bushes or parks in spring evenings, the grasshoppers of various colours, chirping as they leap about everywhere, and then the troublesome mosquitoes, tarantulas and scorpions. The mosquitoes (*zanzarc*) are a regular plague in marshy districts such as Venice, and one has to try to protect oneself from them with smoke, or still better, with mosquito nets over the beds. In warm sultry nights sleep is impossible without some precaution of the kind.

The scorpion (*Scorpio europæus*) lives as a rule under stones, and a sting from its prickly tail is held to be poisonous. It is in the highest degree dangerous to go about barefooted, as it is easy to tread on some crawling animal. The tarantula, a kind of spider (*Lycosa tarantula*) makes no net, but lying in wait in holes in the ground it seizes its prey with a spring and kills it with a bite, by means of a poisonous secretion. On account of this poison its bite may be very unpleasant even for a human being, causing swellings and violent irritation, without being actually dangerous to life. It used to be said either that violent dancing was a cure for the bite of a tarantula, or else that the bite caused dancing madness, and it is a popular belief to this day that the national dance of Southern Italy, the tarantelle, takes its name from this. Both animal and dance, however, are named from the city of Tarentum (Taranto). It may also be mentioned that the variety of the honey bee, now so much raised in Germany, came from Italy, and is called the Italian bee, and also that the praying insect (*Mantis religiosa*) is found from the Southern Alps southwards. Finally, we must name the silkworm (*Bombyx mori*), which was introduced from China and is made use of very largely in Italy for the production of silk. We shall have to return to this insect later on.

Among marine mollusca the cuttlefish are especially striking. A distinction is made between the sepia and the calamaries. The first correspond to *Scpia officinalis*, the others are species of *Loligo*. Both, however, emit the brown liquid called sepia with which they stain the water when pursued or in danger, in order to escape unseen. The most dangerous and voracious among the cuttlefish is the octopus, a creature with eight arms, which may perhaps be the type of the Kraken of the Sagas. The calcareous bone found lying on the back of the sepia in the mantle is often thrown up on the coast, and, as is

well known, is given to cage birds, that they may eat the carbonate of lime and thus keep their beaks sharp.

Land snails are chiefly represented by species of *helix*, of which *H. pomatia* and *H. aspersa* live on the limestone cliffs in enormous numbers. Apparently the monks brought these two species across the Alps, as they are often found in the immediate neighbourhood of monasteries in north Germany, and their power of moving from place to place is very limited. This may also be the explanation of there being on Monte Gargano a peculiar snail-fauna represented principally by *Clausilia*, which is more closely related to that of the Dalmatian coast than to that of the rest of Italy. The animals living on isolated rocks, and requiring a chalky soil, were prevented by the Apulian plain and the sea from being more widely distributed, and may be derived from the period when the Adriatic lay to the west of Monte Gargano, and the latter was a part of the Dalmatian tableland.

Among bivalves, oysters, cockles, mussels, and razorshells have economic value. The oysters are raised on posts in the lagoons near Venice, and in the Lucrine and Fusaro Lakes near Naples. They are transported far inland and are even to be had in inns in the mountains, brought by itinerant pedlars. The Fusaro oysters are large and wholesome: the others require a certain amount of caution, as if they have been grown in impure water they are apt to act poisonously and to produce vomiting and colic. The same holds of the cockles and mussels (*Mytilus edulis*, in dialect *cuzze niure*), which have their centre of production in the Gulf of Tarentum. There is a good sale for the razorshell (*Solen vagina*), which is found sticking upright in the sand, and for the *Tapes vetula*, called *vongole*, used as a condiment with macaroni or soup.

In the southern parts of the sea there is found clinging to the sandy bottom the great pinna (*Pinna nobilis*), triangular in form and with a thin shell devoid of mother of pearl. Its foot is supplied with a *byssus-gland*, by means of which it spins a fastening of horny threads. The pinna is taken for its byssus, which is worked up into gloves in Tarentum, and these fetch good prices.

Besides being rich in mollusca, the sea has many seasquirts (*Ascidia*, *Salpæ*), sea urchins, starfish and sea cucumbers (*Holothuria*). Of sea urchins a species with short prickles (*Echinus esculentus*), is frequently met with in the market. The orange-red ovaries and seminal vessels are good eating. Corals only occur in small individual specimens, as the water has not sufficient warmth for the reef-building species. The red coral (*Corallum rubrum*), which supplies the coral used in jewellery and supports an extensive industry, begins to grow plentifully in the shallows of the African sea, and quantities are taken there

every year. The bath sponge (*Euspongia officinalis*) flourishes better along the Dalmatian coast, and is thus not a genuine Italian animal. A glance at the aquaria of the zoological station at Naples reveals to us the wealth of the marine fauna with its echinodermata, crustacea, sea anemones, shellfish and fishes. This institution was founded in 1872 by Professor Dr. Dohrn, its present director, in order to provide a place where the scientific study of a rich marine fauna might be carried on. The city of Naples bestowed a place for it in the park on the sea, the Villa Reale ; here a building was erected, shut in with holm oaks and palms, in the ground floor of which a series of aquaria display even to the uninitiated the variety and splendid colouring of the marine animals. In the upper stories are the workrooms for scientific investigations and almost every state of the world maintains one or more places here in order to afford opportunity to zoologists and botanists for the quiet study of particular specimens when fresh. Many hundreds of learned men have already pursued their inquiries there and have made a name for this Stazione Zoologica as well as for its director and founder, which is honoured throughout the world. The Station publishes a series of monographs on Mediterranean animals and a periodical, treating of comparative anatomy of animals generally. Its principal supporter is the German Empire, most of its officials being German, and all living German zoologists have been its scholars and guests ; Neapolitans are employed as sub-official assistants, servants and fishermen. The Institute has two small steamers for dredging purposes, which can traverse the Gulf of Naples, but are not suitable for the open sea, so that if specimens are required from a greater distance it would be necessary to obtain more seaworthy vessels, and this it is hoped will come in time. The Italians have a smaller station of the same kind in Messina, a second, chiefly German, has been erected at Rovigno on the Adriatic, but this is yet in its infancy.

## CHAPTER IX

### Population

THE population of Italy has undergone many changes since ancient times. The original inhabitants belonged to the Ibero-Ligurian race ; they had stone implements and were acquainted with a rude kind of pottery without ornament. They seem to have possessed the country from Sicily to the Alps, and to have maintained their ground for a specially long period in the region which still bears the name of Liguria. It was a strongly-built round-headed race with black hair and eyes. Later on they spread further north, and their influence is to be recognized in many elements of the population of the South of France and of Western Switzerland (Department of the Haut Rhin), and even in that of the Palatinate. Remains of their language survive in the names of mountains and rivers and in other geographical names, as for example Dora and Thur, Rhine and Reno and Rino, and also, we may safely say, in the names Corsica, Elba, Mons Ciminus and many others.

These Ligurians dwelt partly in round huts, the pit-like foundations of which have been uncovered in the province of Reggio, partly in caves, for which the caverned limestone rocks on the Italian coasts afforded good opportunity. In the stalagmites or clay floors of these grottoes are found potsherds, flint instruments, and bones split up or carved.

It has not yet been decided with certainty whether an earlier race was settled in Italy before the Ligurians. On the other hand it is established that nations called Italici invaded from the North-East, overcame the Ligurians, and gradually made themselves masters of the country. In the north-west of Italy the Ligurians may have been subdued by the Kelts, who maintained themselves in this region until its colonization by the Romans. The lacustrine dwellings of the Lombard and Piedmontese lakes are ascribed to this Italo-Keltic period. In the remains of these dwellings bronze and stone weapons are found together, indicating a transition to a higher grade of civilization. The pile-villages on dry land, discovered at the northern foot of the Apennines (Terramare) are especially noteworthy, the mode of building being explained either as due to habit or to the fear of floods and damp. We learn from the refuse heaps at Terramare that they raised live stock (including oxen, pigs, goats, sheep, horses, and dogs), that there was little hunting and no fishing. The corn was crushed

and prepared like porridge, not baked, flax was carded and spun into ropes, basket weaving and leather dressing were occasionally practised. The ornamentation of the pottery is in straight and curved lines not organically connected, triangles, circles and the like. The plain of the Po must then have presented a wooded landscape. "Within the forest clearings were to be seen in many places near the brink of the streams, each with its huts of yellow straw, immediately round the village were plantations of grain and flax, beans, and vines; further away towards the edge of the wood were meadows where herds are grazing, the whole making a bright green picture framed by the dark green mass of the forest."

These Italici were overcome and brought into subjection about the time of the Doric Migration by the invasion of a new people, the Etruscans. The extraction and relationship of the Etruscans is still matter of dispute, some considering them Indo-Germanic, some Mongolian. Their culture, which received its highest development in Etruria, so named after them, contains much that is peculiar and that strikes one as foreign, in addition to Greek elements. It is to be remarked that according to the opinion of other enquirers the Etruscans had maintained themselves for a long time previously in the midst of the Italici, but that somewhere about 800 B.C. their state of civilization and their power had become established, and were spread over a great part of the country. They ruled far into the Alps and even carried on barter beyond that range. In the other direction they subdued Latium, Campania with the peninsula of Sorrento (Sorrentum is said to be derived from the Tuscan), Sardinia, Corsica, and Elba, where they exploited the mineral wealth. Metal work of all kinds characterises the Etruscan era, in which bronze was applied to many purposes and was widely distributed in the course of trade.

When the Etruscans dominated the Tyrrhenian Sea Grecian colonisation was commencing in the South; this embraced the whole of the southern mainland (*Magna Græcia*) and Sicily, contesting successfully on this island with the Phœnician power of Carthage, which was also increasing in extent. While the Greek cities were developing higher prosperity in the fifth and sixth centuries before Christ the predominance of the Etruscans was broken by the Latins with Rome at their head, and by the mountaineers of Samnium. The Carthaginian, Greek and Asiatic wars of the next two centuries placed Rome at the head of all the peoples dwelling around the Mediterranean Sea and introduced a number of new elements into Italy at the same time. Spaniards, Gauls, Greeks, Egyptians, inhabitants of Asia Minor and Semites came to Rome as slaves, freedmen, merchants or handicraftsmen, giving rise to the most varied intermixture of peoples.

During the Empire were added Teutons, Scythians and other peoples in a low state of civilization from the northern frontiers. The migration of the nations brought to Italy the Ostrogoths and later the Lombards and Franks, while the South and Sicily suffered from the invasion of the Byzantine Emperors and later on from that of the Moslem. The name of the Lombards is still recalled by that of Lombardy and of the town San Angelo dei Lombardi, and that of the Goths by Santa Agatha dei Goti, near Beneventum. Neither the Teutonic immigration of the north nor the influence of the Saracens from the south ceased in the Middle Ages. In spite of them, however, the Italic population, especially in the towns, received new strength, and thus laid the foundation of an independent nation consisting of the most varied elements. This is united now, it is true, for the first time under native rulers after seven hundred years of disruption and foreign tutelage. Thus the present people of Italy is not homogeneous, as indeed it may be said of almost every nation of Europe, but has been slowly formed by welding together elements of most varied character. The several peculiarities of these constitute the differences between Northern Italians on the one hand, Central Italians and Sicilians on the other. The nation has, however, grown up under the predominance of what are called the Romance peoples, who have supplied the fundamental character of the nation in their customs as well as in language and physique.

The following general qualities may be specified. The Italians are of low or medium stature, with dark or black hair and eyes, and skin somewhat deep in colour; they are of a lively temperament and easily excited, musical and imaginative in general. In all we find a delight in expressive musical speech together with a certain dignity and unaffected deportment. They mature early, but grow old quickly and are prone to obesity in middle life. Of course exceptions are not wanting as people of tall stature are to be seen often enough in some parts as well as people with fair and chestnut brown hair. On the other hand low-legged hooknosed individuals in the south of the country point to an intermixture of Semitic Saracen blood.

The stature is lower than the average among northern countries. The medium height of Italian recruits at the age of twenty was found to be 5 feet 3·8 inches with frequent variations ranging from 5 feet 3 inches to 5 feet 5·4 inches. As a rule the mountaineers are of higher stature than those of the plains, and among these last the townspeople are shorter than the peasants. In many parts dwarfs are said to be by no means rare. Boys arrive at puberty at the age of from 14 to 16, girls between 13 and 15, the period becoming earlier as we go further south. One consequence of the early puberty is the early fading of

beauty, especially among girls, who are *passées* between twenty and thirty, and in the country look quite old at forty, owing to hard work. The men are in general better preserved, but they grow grey and bald at a comparatively early age, and are often unbecomingly fat. Yet in middle and later life the men have a certain dignity of demeanour which they understand how to turn to good advantage in their intercourse with one another, and still more with foreigners.

One ugly characteristic of the people is their cruelty and harshness towards the lower animals. Experiencing the manner in which horses and asses are tugged about, beaten and illtreated, it is impossible to think that the Italians have any feeling for animals. If the question is put to them they generally reply "It is only a brute beast," as if beasts were incapable of feeling pain. With this, however, signs of tender affection for animals are met with, but this is generally confined to pretty or young animals, while the lame, overdriven, aged beasts of burden receive so little consideration that they are sometimes allowed to perish miserably between the shafts of the over-loaded carts. The societies for the prevention of cruelty to animals have as yet been unable to bring about any improvement, because they did not spring from the conscience of the people themselves, but were introduced from outside.

The Piedmontese have the largest admixture of Celtic blood and thus they resemble the French in many respects. They are taller, on the average, of more stately bearing and often inclined to leanness. They are said to be energetic, persevering and tenacious in what they undertake as well as reliable and conscientious and of sober judgment. This is all the more important as the same cannot be predicated of the inhabitants of Southern Italy. Piedmontese and Lombards have consequently been appointed to many positions of trust in the newly unified state and have often made themselves unpopular by their bureaucratic harshness and strictness.

The Lombards, in consequence of the extensive infusion of Teutonic and Celtic blood, are tall, powerful, broad-shouldered men, and fair hair and blue eyes frequently occur among them. They are enterprising and hardworking, and their industry and conscientiousness cause them to be prosperous. Lombardy has become the chief seat of industry in Italy, partly, it is true, through the influence of the Swiss.

The Venetians are, as a whole, graceful and sanguine, and are of pure Romance type. They are dignified in bearing and agreeable in intercourse. Their long servitude, first under a despotic oligarchy, and then under an absolute foreign rule, has brought about an indifference in the people, so that the Venetians are mild and friendly but not very energetic.

In the Upper Alps the Romanised remnants of the ancient tribes have kept up their own language and many peculiar customs. Their number is not great, and even these are shared with Switzerland and Austria. The chief seat of this population, thrust back into the pathless gorges by the contests of the nations, is the Valley of the Upper Adda and the Canton of the Grisons.

The Tuscans are amiable and courteous; their dialect, an extraordinarily rich and flexible one, has become the general language of Italian writing and conversation. In appearance they are slender and elegant, qualities which the pre-Raphaelite painters have pushed to insipidity in their Tuscan pictures. The Tuscans are renowned for

their delicate and graceful mode of expression, so that their province still forms the high school for choice Italian.

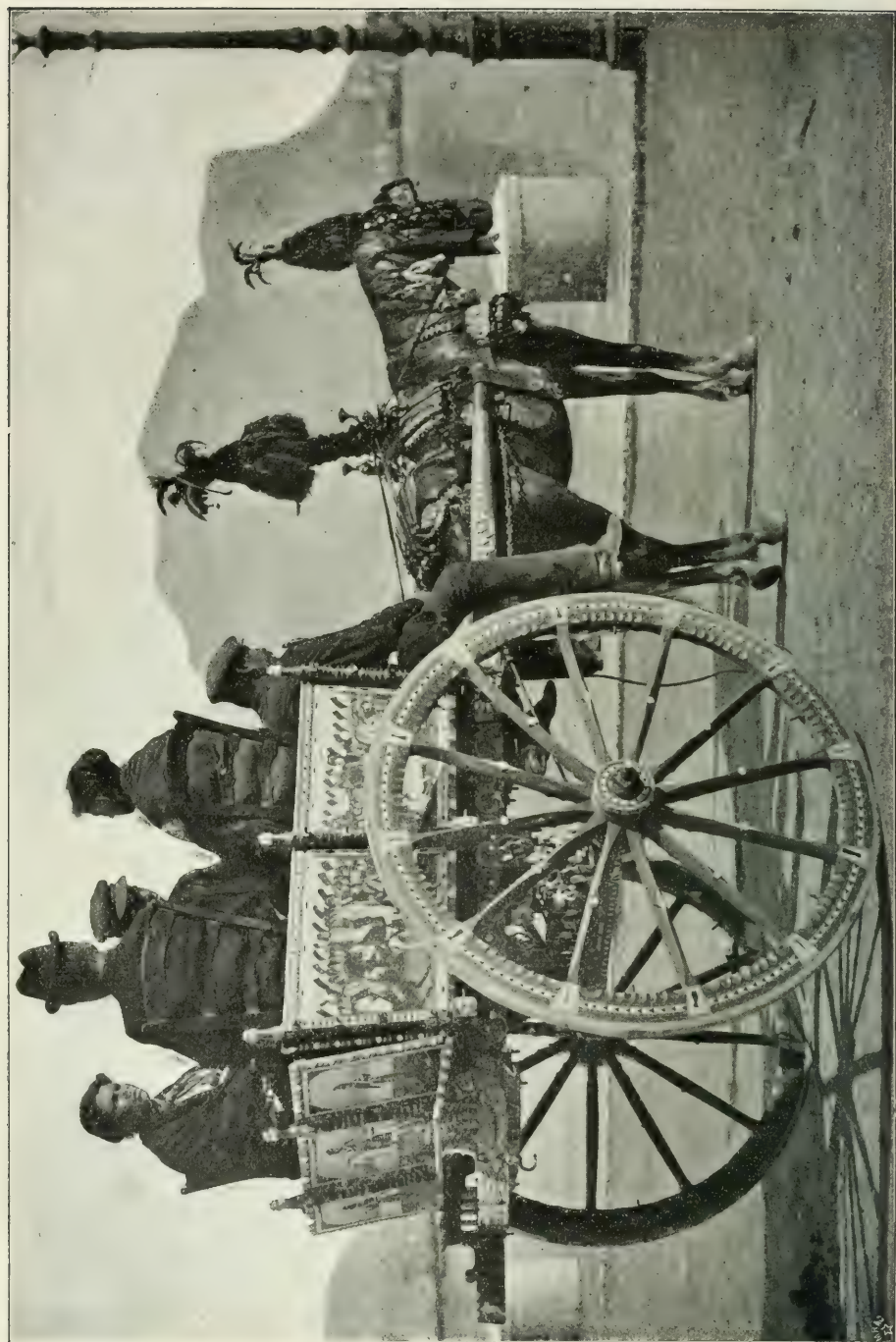
The inhabitants of the Marches and Romagna, the *Romagnoli* are considered emotional, wild and violent, secret societies and revolutionary ideas being prevalent among them. The Roman holds his head high as the descendant of the citizens who once ruled the world. He is tall, and the symmetry of his limbs renders him the most beautiful type in Italy. On the other hand the people of Campania have been rendered so degenerate, and even savage, by fevers and by the pressure of taxation that it is not safe to repose the least trust in them.

The Sardinian has much admixture of Spanish blood; he is serious, honourable and industrious; the nature of the country renders him hospitable but revengeful. He differs in many ways from the Italian of the mainland and



DRESS OF A SARDINIAN HERDSMAN.





SICILIAN CART.

has apparently retained a number of traits peculiar to the ancient Sardinians.

The Southern Italian possesses great natural vivacity together with impulsiveness, loquacity, humour and quick perception of the ludicrous, but no strong inclination to work, and above all no care for accuracy. Enduring and self-sacrificing when they are inspirited or urged on, they soon let go their hold if other things divert their interest and attention. Amiable and complaisant as they are in intercourse, so far as words and small civilities go, yet there is no such thing as mutual confidence excepting what is brought about by family, party or material interests. Lofty forms of powerful build, with fine regular features, are native in the Basilicata and in Calabria. In Naples the popular type, especially among the women, has something of the negro; this is sharply evinced in the black woolly hair, the stumpy upturned nose and the thick lips. This and the small figure, sometimes lean sometimes bloated, make the Neapolitans the ugliest race in Southern Italy. Perhaps it is the Greek blood on the coasts that endows the population of Capri with regular features, beautifully arched brows and straight noses.

The Sicilians, a mixture of Italians with Greeks, Spaniards, Arabs and Teutons, are shy and reserved with strangers, even with other Italians, and only feel really comfortable on their own island. External dignity and good conduct are general and are preserved even in the times of the greatest excitement, as is shown in the history of the Sicilian risings. But hatred and impulsive rancour, going as far as cruel murder, belong at the same time to the character of the people, who nurse their impulses in silence till the time comes for them to break forth with irresistible violence. The sentiment of standing by one another rules the whole life of Sicily, political and private. This appears in the conduct of the Deputies, in the brotherhood of the brigands and in utter disregard of new Italian regulations, for example even in the case of the closing of the island at the time of the cholera.

The differences between the provinces are generally very sharply marked. The new era of Italian unity has only been able to bring about superficial equality by regulations of different kinds, while the independent development of the several parts of the country and the differences between them dependent on their history are everywhere noticeable. A provincial patriotism, a particularism, going down even to separate communes, continually acts as a counterpoise to the sentiment and enthusiasm for unity, and this to some extent consciously and to some extent unconsciously. These opposing tendencies will wear off in course of time through the railways and modern intercourse.

The transference of officials, the sending of recruits into other provinces, the extension of reading and writing by the instruction in the numerous elementary schools which have been established, all tend in the same direction.

One result of the state of mutual exclusiveness that has lasted for so many centuries is the persistence of national costumes. In Germany these have to a great extent gone out since the introduction of railways, in spite of all the societies formed to maintain them. A similar process may be observed in Italy, where northern towns already show traces of the attrition caused by trade. In Central and Southern Italy, as well as the islands, the women still keep their coloured dress and glittering ornaments. Each province, frequently each isolated hamlet among the rocky nests perched on lofty mountains, has its own peculiarity, whether in the cut of the clothes, in the shape or size of the earrings, or in the colour and trimming of the gown or bodice. Some more details will be communicated in the chapter on chorography, but the richly coloured garments of the Sorrentine and Sabine women are well known through countless illustrations.

The men are dressed more simply, but among these some are conspicuous, the shepherds and fishermen, and the Venetian gondoliers. The shepherds wear sheepskin mantles or coats, leather knee-breeches, sandals with bands consisting of strips or rags of linen or wool reaching to the knee, and large felt hats. The fishermen, on account of their occupation, have a costume of linen, as being quickly dried, short breeches and a tight-fitting cap or a fez. The men of Sardinia also have a special dress.

Provincial peculiarities also show themselves in language, so that a Piedmontese can scarcely understand a Neapolitan, or a Neapolitan a Sicilian. The full clear ring of the Tuscan is spoiled in Piedmont and Lombardy by an approximation to the French, and in Naples by the wilful running of words together or shortening them, and still more by the dropping of the final syllable. Sicilian has a rich vocabulary of words wanting in the written language, many of which seem to be derived from the Arabic.

Side by side with these marks of separation we have a series of qualities possessed in common. There is the delight in music, as much in rhythm as in melody; the passion for play, including the game of chance called Lotto, the liking for politics and public discussion, a great hardness of body, and connected with it a liking, at least among the men, for passing their lives out of doors, in the streets.

The pleasure taken in gambling may be observed in all public places and places of entertainment. If nothing pressing intervenes, e.g., if there is no political dispute, they play in Northern Italy at

“Mora,” which consists of guessing how many fingers are about to be stretched out, adding to them the fingers held out by the guesser in his turn. In Southern Italy grown up people as well as children play at Boccia, and if there are no balls at hand they make use of oranges or chestnuts. Any one who has no urgent business stands and looks on, acting as a chorus and making remarks in praise or blame, the latter often leading to hot words. The Mora-players, too, whose shouting can be heard a long way off, always have onlookers who often join in the game in their turn.

These games, and even the numerous games at cards (Tocco, Ventisette, etc.), are harmless in comparison with “Lotto.” The child’s game known to us under that name, with cards and counters with corresponding numbers, is also much played in Italian families, the counters being thrown out of a bottle-shaped basket, always previously shaken up. The game which has been indicated as so pernicious, one, however, licensed by the State, to which it yields a considerable revenue, is the lottery, which is an affair of every day as in Austria. Every one in Italy, old and young, man and woman, joins in this if they have a halfpenny to stake, and there is a drawing every week. Five numbers are indicated, to be drawn out of 90, and according as 2 (Ambo) 3 (Terno) 4 (Quaterno) of these numbers come out in the right order, a prize is gained which of course increases progressively. The seats of the lotteries, where any sums may be staked, are the cities of Naples, Bari, Florence, Milan, Palermo, Rome, Turin, and Venice. The art is to indicate the right numbers, and to this end all kinds of superstition are resorted to. Any objects, accidents, especially disasters, dreams, have corresponding numbers, and these are selected when anything extraordinary has taken place in the course of the week. A coachman runs over a girl when driving his mistress. Immediately he lays on the numbers which stand for Disgrazia, Ragazza, Padrona, in the hope that the accident is an indication of a lucky number. Recourse is had to fortunetellers, somnambulists, arithmeticians, who have observed lotto for years and apparently believe that they are able to foretell the numbers to be drawn. All newspapers contain advice of this kind, which is eagerly read, and often enough made use of.

Lotto-books and dream-books are exposed for sale everywhere, and scarcely a family is without them. The State draws a not inconsiderable revenue from this rage for gambling. The chance for those who put into the lottery is 5: 90 that one of the five may be drawn, and that all five may be drawn it is

$$\frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{90 \cdot 89 \cdot 88 \cdot 87 \cdot 86} = .00000002275$$

The prize for a single number is  $10\frac{1}{2}$  times the stake, for an Ambo 250 times, for a Terno 4,250 times, and for a Quaterno 60,000 times.

The following sums were returned in the State Budget as the revenue from lotteries :—

1884	. .	72,500,000 francs	. .	£2,900,000
1888	. .	78,300,000	„ . .	3,132,000
1893	. .	76,100,000	„ . .	3,044,000

The actual gain, however, is much less than this, as the prizes and the pay of the numerous collectors have to be deducted. In 1893, for example, 44 out of the 76 millions had to be expended in this way. Even if a portion of the money thus abstracted from the people with the help of their vices does return into circulation, the lottery system remains none the less as a cancer in the wellbeing of the nation, as each superfluous halfpenny instead of being put aside is gambled away. A direct tax on the amount of net profit would be oppressive but less pernicious. On the other hand the State, struggling as it has to do against the deficit, can hardly forego these small takings at the present time. For the rest, a source of revenue in which 60 per cent. is spent in the raising is a sheer absurdity.

This rage for play is the expression of the desire, certainly an intelligible one, if somewhat childish, to get rich as quickly and with as little trouble as possible in order to enjoy a pleasant life. The dread of regular steady work is a trait which crops up in all positions and grades of life in Italy. Thence come the endless building speculations, thence, too, the little cheating tricks in trade which have given Italian merchants such a bad name abroad, one reason that they have declined from the ruling position they once occupied and are obliged in their own country to see the overwhelming mass of import and export trade in the hands of foreigners, English, Swiss and Germans.

The spirit of *laissez faire* pervades the whole people. The *lazzarone* who lies about on the quays of the harbour in summer, and is quite contented if he has enough just to keep him from actual starvation, the government official who has not the conscience to be at the service of the public but keeps people waiting his pleasure while he is reading the newspaper, the well-to-do Italian who stands about at street-corners, spits and perhaps turns into the confectioners for a tart or sweetmeats, is at bottom under the influence of the same want of energy and of the same disregard of the value of time. A Northerner is especially struck by this aimless lounging, “*flaner*,” as the French call it, agreeably interrupted at times, however, by lively discussions.

Indeed, in order not to be unfair, it is necessary to remember that the Italian is accustomed to pass all his unoccupied time in the streets, as his lively temperament prevents him from being contented with the monotony of the house. Many an hour that Germans would spend at home in reading or cards, or in drinking beer at some place of entertainment, is passed in this lounging, which is, however, not to be excused on that account. At the time when the production of sulphur in Sicily was flourishing, and when the wages of labour were high, the people would only work half the day in the mountains, as they earned more than enough in that time and preferred to amuse themselves during the other half in the market place of Girgenti, or in Grotti's or Raccalmuto's shop, instead of seizing the opportunity to get a handsome remuneration.

Political affairs, parish disputes, party matters, social chat, supply the material for this conversation, while in times of commotion or economic hardship secret plotting often plays a principal part.

One consequence of this street life is that in all the larger towns "gallerie," as they are called, have been constructed. These are halls or arcades with shops, covered in and protected from rain and wind where people congregate in the evening and in the earlier hours of the night. In Bologna all the old streets are provided with protected arcades in which people lounge, and for Rome the remarkable book *Roma senz'ombra e senza sole*, informs us where we may refresh ourselves at different times of the day, winter and summer, in warm sun or cool shade. In the southern provinces the street life is still more varied, as the stalls are wide open and the people at work sometimes come out with their work as far as the middle of the street. This is often necessary, as the rooms on the ground floor in the narrow lanes are dark, narrow and unsuitable for carrying on handiwork. The cobbler sits before the door, the tailor in the doorway or close to it, joiners saw and locksmiths hammer outside close to the entrance, the walls of which they look upon quite as their own property. Passing acquaintances stop and snatch a bit of conversation, and if any incident occurs it gives an opportunity of discussing it from A to Z and getting new and plentiful material for more talk. It must, however, be acknowledged that the class of small handicraftsmen is the most industrious of all and that they supply a shining example to the middle and upper classes.

The endurance of the people is wonderful. It is known that Lieut. Payer took sailors from Trieste<sup>1</sup> with him in his Polar expedition, and in the hardest frost, when the Norwegians, wrapped in thick fur, shivered with cold, these men went about in the open air in light

<sup>1</sup> Not from Trieste, but Quarnero. (Trans.)

clothing. In the mountains of Southern Italy it is decidedly cool in spring. A woollen mantle drawn up to the eyes and a pan of charcoal in the absence of a regular stove are the only means the people have of keeping warm, and it is a sign of severe cold when the doors of the shops and dwellings (*bassi*) in Naples are shut in winter, for inside it is then close, dark and cramped, things that the Italian abhors. In addition to this not a single door or window shuts properly, there is always a draught, so that even Russians as a rule curse the Italian winter. It is true that every year many chills are caused by cold days and that these, in consequence of the small care for health and the general want of cleanliness, easily turn to inflammation of the lungs or pleurisy, becoming rapidly fatal. The watering-places of the Riviera have a milder and more equable climate, and there the arrangements and conveniences of Central Europe are to be had. The very poor are the worst off in the cold, as the peculiarly German warm halls are of course unknown, and their clothing is thin, ragged and entirely insufficient. When beggars have no roof over their heads they often get frozen, even in Naples, during clear winter nights.

The passionate nature of the Italian is displayed in matters of love and all things connected with it, and in revenge in the case of any mortification inflicted on family honour. The vendetta of Corsica is well known, lasting for generations like a creeping disease, and inexorably demanding its victim. It is found in Sardinia and Sicily, as well as Calabria, but in a milder form. In the higher classes of society the duel plays a conspicuous part; duels are often treated in the newspapers as on a par with important state affairs, full details with explanations by eye-witnesses being given. The member of Parliament, Cavallotti, who was the last to be run through, had fought no less than thirty-six duels. In the same way the rabble of Naples have their *dichiaramento* in which two adversaries or two groups fight out their quarrels in some lonely place with revolvers, if these cannot otherwise be made up, yet the affair is generally so managed that the result is not a very bloody one. Brawls over wine or cards inflame their minds to such a degree that knives or revolvers are drawn. Then shooting begins and all the people in the streets fly into the shops or throw themselves down on the ground to avoid being hit by stray or ricochet shots. If a homicide occurs, the perpetrator hides among his friends and relations till the affair is thought to have blown over but even then he often falls a victim to revenge at some later time. The revolver and the dagger, and even the razor, are employed in the numerous dramas arising from jealousy. The man who has been jilted lies in wait for the false fair one and gives her a cut in the face with a razor to disfigure and mark her. And just

as German students make a show of their gashes the women with many slashes in the face are proud of their scars, as they are a sign of being sought after. The rival falls from the blow of a dagger or the ball of a revolver ; the three-edged dagger is an especial favourite, and was used successfully and with terrible coldbloodedness against Carnot and the Empress Elizabeth.

Workmen who feel themselves aggrieved occasionally turn their daggers against the offending employers, and the prisons are filled with people who have attempted the lives of others. Three thousand people were murdered in 1896 ; this is 12 in every 100,000, and in the statistics of crime Italy unfortunately stands at the head of European states in respect of offences against life. The carrying of weapons is indeed forbidden by law, but in spite of this almost every man among the people of Central and Southern Italy has some weapon about him, as without it his manhood is not considered complete. The sense of insecurity and mutual distrust, the fear of being attacked by night in the streets of the town or when riding through the country is the reason that the landowners and farmers never go about their business without arms or companions. Even women are ready with the revolver in Central and Southern Italy when they have grievances or desertion to avenge, and if the offender cannot be got at they resort to suicide by poison or by opening their veins, so that scarcely a newspaper can be opened that does not mention some affair of the kind.

The fear of being carried off by force, or being molested by some one under the influence of sudden and unreasoning passion, must indeed be the reason that young girls of the better classes are never allowed to go out into the streets alone. They and the little boys are taken to school and fetched away by servants. The high class institutions send an omnibus to fetch the girls in the morning and to take them home again at noon. It is only during recent years that the influence of foreigners, especially English and American women, has introduced a slight relaxation of this severe propriety and personal restraint. The girls are taught in convent schools, or schools conducted by nuns, and are kept at home till the time of marriage, if the family is of any standing financially. The results are like those in France, but enhanced by the lively Italian nature. In spite of their passionate natures there is to be noticed a touch of calculating sobriety in the women, which forms a wholesome counterpoise, so that an alternating play often goes on between the two fundamental traits of the Italian female character, which explains to us the sudden change that often takes place in inclination and action.

The woman of the middle classes is even more confined to the house

and the family than is the case in Germany, as they are not allowed to take part in the life of the streets, and the insufficient education given at the convents prevents them from caring for much that might well be permitted. In the lower classes this seclusion is impossible, as the woman has to take her share of work. The punishment for lapses from propriety is often rapid and bloody. It is pleasing to observe that the Italian woman is entirely free from prudery and affectation. Proceedings natural to humanity are treated as being so, and a young mother has no hesitation in giving her child the breast in the presence of strangers. From the time of Leonardo da Vinci the Italian painters have always represented the Madonna with the joyous happy expression of pride in her duties and her rights. The devotion of parents to their children is touchingly brought out in Farina's book, *Il mio figlio*, which is a faithful picture of life, and the excessive tenderness of the parents towards their children often to be seen in the common people is such as to rouse fears for the children's health. The consequence of this treatment in the following years is naturally that they are often led astray and misconduct themselves, having been early accustomed to having their own way without having passed through any firm healthy training. This is especially the case among the boys, who as soon as they get into the higher classes at school think that they are fit to take part publicly in politics.

Family bonds are very strong, and again and again draw the different members together after separation. Family influence plays a principal part in the allotment of offices, the appointment to benefices, and the arrangement of marriages, and the very word "nepotism" comes from Italy, where the thing itself is practised in undiminished strength, if not quite so openly as of old, and finds appropriate soil in the political and ecclesiastical parties, whenever it is not in some measure counteracted by some ancient official tradition.

To the eyes of a Northerner the internal arrangement of the dwelling houses is without many conveniences, and lacks a general air of comfort and cosiness. First of all the rooms are covered with clay or tiles instead of boards; these are agreeably cool in summer and easy to keep clean, but become unpleasantly cold to the feet in winter, so that the floor has to be covered with different kinds of rug or with straw-matting. Then the rooms are high and large, and in the narrow streets are often dark, another consequence of the heat in the summer months when people remain at home and wish the rooms to be cool. The better dwellings have a balcony where the inmates sit of an evening and watch the street life, in which the women are only allowed to mix occasionally. The walls are often only whitewashed and are seldom adorned with rich wall papers. The small number of articles of

furniture, frequently only a sofa and a number of chairs against the walls, make the rooms look bare and empty, and even if there are many kinds of knick-knacks and pictures a certain want of taste is displayed in the arrangement and distribution of the articles. Flowers, which are so largely used for adorning the rooms in North Germany, where almost every one has one or more flowering plants in the window, are almost entirely wanting, as the Italians find but little pleasure in things that require careful tending. In addition to this the cool dark



CASTROGIOVANNI IN SICILY.

rooms are not suitable for plants. If any one wishes to raise flowers he hires a room with a veranda or with a flat roof where the plants may be placed. The poorer people have often only one room to work, sleep and cook in, the beds being rolled up in the morning and stowed away in a corner, and the bedstead serving as a table during the day; the door does duty as a window as well, and has consequently often to be kept open till bedtime.

The grottoes excavated in the volcanic tufa in Rome, Naples, Pozzuoli, are very unhealthy. In these, besides the dwelling room in front, there is a stall behind for an ass or a horse, the effluvia and the ooze from which render the whole constantly muggy and damp. The

Neapolitan caverns, far below the level of the street, in which often sixty persons find a lodging at night, can only be called horrible and a disgrace to humanity. They are hotbeds of disease and vice, and though something of the kind may be found in all large towns, those of Naples have a character of their own.

By far the largest number of towns and villages in Italy date back to old settlements made in Roman or Grecian times, the ancient names recurring in writings or coins, so that they can boast of having existed for over a thousand years. We may gather from these indications that the people were not distributed through the whole land in the fashion of Westphalia or Scandinavia but were confined to garden-like districts within certain narrow limits. Collective life in strongly enclosed well-defined communes and fortified towns has been from olden times a characteristic trait of the Italian and Greek peoples, to such a degree that the world empire of Rome was only a widened municipal commune with rights and customs which were gradually extended to the whole realm. Rome had to subdue well fortified country communes and cities before becoming mistress of Italy and after the time of the Emperors, in the period of the migration of the nations, these municipalities had re-established, protected and extended their rights. The power in the Middle Ages of individual cities such as Venice, Milan, Genoa, Florence, Amalfi, is well known, and the mutations in the fate of the country only led to the extension of this communal element till it produced wide-reaching disruption.

The volcanic districts such as the Campagna, torn by numerous deep gullies, the isolated limestone mountains of Campania and the Apennines, plainly invite the building of fortified places, the elevated position of which should protect them from surprise or sudden attack. Thus the towns in Etruria even now are rocky nests perched above the valleys, and the same is the case with the villages and hamlets of the Apennines and of the interior of Sicily. Fever too formed an equally strong reason for leaving the low-lying districts and seeking the purer air of the heights. But the space is often very limited, the houses have often to be built against the rock, and there is absolutely no opportunity for wider development; the streets are always narrow and tortuous, and suburbs are entirely wanting, except for the groups of houses erected in recent times at the foot of the mountain in connexion with the railway and for purposes of trade. Gardens within the town, or even without the gates, were luxuries which even now are seldom found. Some open spaces before the church or the town hall suffice for the supply of fresh air, and to this is added in the larger towns a broad street or a park for the daily drive (*passeggiata*).

Formerly many of these towns were only accessible by bridle paths,

and could be reached by carriages only with difficulty, or not at all. Of late beautiful roads have been made which wind up the mountains, but they are little used owing to the small amount of wheel traffic, the people preferring the old pathways whether for walking or riding. The railway stations lie at a distance of several kilometres from the villages after which they are called, these being too high up for the stations to be placed nearer.

These villages, which often contain several thousand inhabitants, are very picturesque from a distance. On the very top of a mountain, or on the declivity, rest, as if glued on, an irregular collection of greyish houses, blackened with smoke, which look like ruined fortifications and are overtopped by the shining, coloured cupolas of the better kept churches.

In the interiors dirt reigns supreme; anything unfit for use is thrown into the street and remains lying there till the animals, pigs or fowls, take pity on it, if it is something to eat, or till it slowly rolls down the hillside. Where pigs are kept and fastened up in the streets near the houses, their routing about soon destroys the pavement, which gets full of holes. There is no lack of fowls, turkeys or pigeons anywhere. The pavement is covered with brown mud, unpleasantly slippery after rain, which renders the limestone flags and flights of stone dangerous. Even in towns of 10,000 inhabitants there is often an entire absence of any means of lighting the streets in the evening, so that any one who has to go from one house to another has to take a torch or a lantern to enable him to find his way and to avoid the holes. There seems to be little change in this respect since the time when the Roman consuls were allotted a couple of torchbearers as a guard of honour after dark. The towns of Northern Tuscany and Northern Italy are cleaner and better kept, many of them having even introduced the electric light, and everywhere there is a gradual progress towards a better state of things.

The high position of these towns necessitates an artificial supply of water which, wherever possible, is brought into the town in flowing streams. Where the lie of the ground is unfavourable the *acquedotto* ends at the foot of the hill and all household water has to be carried up by men or beasts, not much to the advantage of cleanliness, as may be supposed; those who are unable or unwilling to fetch it themselves having to pay the carriage. As a rule the water barrels and the great clay jars, reminding us of the gigantic clay vessels of Pompeii, are filled in the evening, and about sunset the women and girls assemble at the well with their vessels. These are different according to the town, in some places being small vessels of wood, and in others clay pitchers or wide copper caldrons which are carried home on the head. Ancient

crones or greybeards past other work toil up with their pitchers to earn a centime or so, or, if they are better off, drive a mule laden with two vessels, and there sell the water or get paid for the driving. Then before nightfall the cattle, asses, and perhaps even the pigs, come to the drinking place. The maintenance of the aqueduct is one of the chief duties of the municipality; it forms a standing item of the budget and is frequently an apple of discord between the parties.

The separate houses in the mountains are usually of limestone blocks, often rough hewn and imbedded in mortar. Through this and on account of the sloping ground on which they stand, the walls, which are somewhat thick, are wanting in stability and are not able to offer much resistance to earthquakes. There are two or three stories, and the rafters often remain visible and bare underneath while above they support floors of laths, canes and cement, or flattened clay. Where there is an abundance of rain or snow the roofs slope, though not, it is true, at a very great angle. The flat roofs, the low cubical houses of at most two stories, are chiefly to be found on the coasts of Campania and Southern Italy as well as in Sicily. These buildings are covered in with flat ceilings, occasionally supported by beams, and the upper surface, the roof of the house, is often asphalted and thus rendered impervious to rain. This is the summer evening resort, the garden, frequently the poultry-yard, the drying ground for maize, and in Torre Annunziano for beans; the washing is hung out and other household proceedings are carried out here that in Germany are relegated to the back yard. Posts and laths entwined with foliage and plants of various kinds make the roof a pleasant and refreshing place of resort after the heat of the day; mandolines and guitars are to be heard in the evening, and a neighbourly chat is carried on across the narrow streets.

The danger to these vaulted roofs from earthquakes has been already alluded to. A slight displacement of the side walls causes the roof with its heavy asphalte and concrete to fall in, the descending masses often breaking in to the cellar. For this reason pumice-stone and scoriae are used for roofing on account of their low specific gravity, just as at Pompeii 2000 years ago. Where tufa, whether of volcanic or sedimentary origin, is abundant, the whole of the walls are constructed of this easily worked rock (e.g., Naples, Nocera, and part of Rome), but they cannot be left in the rough, as without a thick covering of stucco they do not keep out the wind and the rain, and even when thickly plastered the draught often makes its way into the room in a high wind. The stairs of the houses are invariably of stone, partly lava, partly a cheap kind of marble which covers a core of cement or concrete, thus greatly lessening the danger from fire.

The nomad population of shepherds, and the agricultural labourers of Apulia and Sicily dwell in thatched cottages (*capanne*) which are easily erected and quickly pulled down again. In Sicily these wandering families are said to be contented with the depending branches of an olive tree as roof and house in the warm rainless nights of summer.

The worst thing about the Italian houses is the drainage. Many towns have constructed systems of drains or other means of disposing of faecal matter. Venice carries all into its canals, by no means to the advantage of its sanitary condition. Genoa, Palermo, Leghorn, Naples, carry it to the sea, but as the first arrangement became insufficient owing to the extension of the towns, and even became actually dangerous, a huge tunnel has been excavated from Naples to the Bay of Cuma, where the refuse is to be poured out into the sea at that unfrequented shore. The smaller towns of the interior, however, have not such convenient opportunity for disposing of refuse, and consequently persist in the primitive customs, contemning all progress in sanitation and hygiene. There are no privies, but people make use of large clay vessels (*cantari*) which are simply emptied outside the town walls, or else men wander about the neighbourhood of the place to relieve their natural wants, thus defiling all the environs. From the villages of Northern Italy to those of Sicily there are roads and paths in the neighbourhood of the dwellings which are horribly foul, and it is easy to explain how zymotic diseases, dysentery, typhus, and cholera make such gruesome ravages. Many German villages are not so clean as they might be, but such loathsome dirt as is to be met with in Italian villages would never be endured in them.

As to the foundation of the towns, the causes in the case of the ancient Grecian colonies depended on good harbours and secure positions. Syracuse lay on an island (Ortygia) between two bays, Tarentum, Naples, Pozzuoli, Cumæ mark the central point of gulfs which encroach on fertile plains. It is the same with the Phœnician Palermo and the Carthaginian stronghold of Lilybæum. Agrigentum (Girgenti) had a very strong position but an unprotected harbour, while Messina, with a good harbour but without means of defence on the land side, had an extraordinarily favourable position for trade in ancient times, situated as it was on the straits uniting the two seas.

Many of the once important centres of trade have receded or become deserted, as for instance Poseidonia (Pesto), which has been supplanted by Salerno, Pisa through the filling up of its harbour so that its trade passed to Leghorn, and Ravenna through the inundations of the Po which caused Venice to flourish.

Where river valleys open into the sea, and thus at the termination of the trade routes of the interior, we find Venice, Genoa, Rome and the

Apulian ports, with the fertile land of the Capitanata and the district of the Ofanto behind them. Near important passes lie Turin, Novi (Genoa), Bologna and Nocera (Salerno). The North Italian towns of Milan, Bergamo, Brescia, Verona owe their existence to the terminations of important valleys and groups of valleys on one side of the Po, Parma, Reggio, Modena, Rimini on the other, as also do Capua, Foggia and in a certain sense even Rome. The Etruscan cities, Corneto, Orvieto, Chiusi, and others were fortresses in strong positions for ruling the surrounding country. The numerous villages and small towns of the coast were built for fishing purposes, but they must have required other favourable circumstances, such as good arable land, or some inland trade, as many stretches of coast have remained almost uninhabited to the present day. On the Tuscan and Roman shores the reason of this is the prevalence of fever, and the same cause operates on the plain of Crati in Calabria, once ruled by Croton and Sybaris. In the Terra d'Otranto the small number of towns both on the plateau and on the coast is due to the unremunerative waterless nature of the chalky soil. Florence, Perugia, Benevento, Cosenza, Aquila, Solmona, Teramo, Ascoli and others are centres of intercourse for the middle and upper sections of the valleys.

The exclusive character of the Italian commune was emphasized in several ways, as by the absence of outlying villages. But in many cases an existing commune consists of several scattered groups of houses, themselves enclosed, which are designated *Frazione* or *Sezione*, and some of these formerly possessed a kind of independence. These are most often to be found on the spurs of the Apennines, where several points in close proximity attracted population, and where the prevalence of the Feudal System in former times split up the land into a number of small portions, each with its own privileges.

The number of inhabitants in the kingdom of Italy, according to the last census, that of 1897, is given at 31,290,000. Here, too, the population has doubled itself in the course of a century, despite the extensive emigration to America. The numbers for this period, which it is true depend partly on estimate, are as follows :—

1770	14,689,000	1871	26,802,000
1800	17,237,000	1878	28,209,000
1833	21,212,000	1886	29,943,000
1861	25,017,000	1891	30,347,000

The distribution of population among the several provinces and the numbers per square mile are given in the following table :—

	1879	To the Sq. Mile	1886	To the Sq. Mile	1895	To the Sq. Mile
Piedmont . . .	3,077,200	266	3,204,390	279	3,252,738	284
Liguria . . .	886,885	442	924,634	448	952,573	461
Lombardy . . .	3,653,941	384	3,872,792	407	3,393,211	414
Venice . . .	2,812,022	302	2,974,828	310	3,004,161	312
Emilia . . .	2,193,445	271	2,280,219	281	2,360,848	292
Umbria . . .	573,405	151	603,146	164	595,579	156
The Marches . .	948,284	248	988,271	259	963,942	253
Tuscany . . .	2,219,422	235	2,316,204	246	2,281,446	245
Rome (Latium) .	849,125	179	947,098	169	968,135	210
Abruzzi and Molise	1,333,056	207	1,396,214	217	1,365,171	212
Campania . . .	2,879,717	434	3,033,257	476	3,062,011	481
Apulia . . .	1,522,782	189	1,617,401	222	1,778,323	238
Basilicata . . .	532,927	136	546,982	138	540,287	138
Calabria . . .	1,261,310	212	1,317,173	223	1,315,266	223
Sicily . . .	2,798,672	276	3,148,958	312	3,325,203	330
Sardinia . . .	667,427	69	717,740	74	731,467	77
	28,209,620	242	29,889,607	266	30,347,291	271.

From this table it is seen that while there has been an increase of population generally, the density is very different in different localities. Sardinia is the most sparsely peopled, having only 77 to the square mile, and being far behind all the other provinces in this respect. Then follows the Basilicata, surrounded by inhospitable mountains, which has 138, and Umbria, a similarly rough country, which has 156. The prevalence of large farms, employing a herd of nomadic labourers, formerly brought the number in Apulia down to 189, and the fear of fever has reduced that for Latium to 210, about which we must remark that Rome with her 300,000 inhabitants is included, which increases the number for the district by about a third. Highly developed industry causes the dense population in Liguria (461) and Lombardy (414), while the fertility of the soil and the *petite culture* carried to the highest point accounts for the number of 481 to the square mile in Campania. In order to form a comparison we may state that the population of Umbria (156) and the Basilicata (138) is about as dense as in the provinces of Posen (161), Hanover (161), and Pomerania (133), in 1895, that of Piedmont (284) corresponds with the province of Hesse Nassau (287), and that only Rhineland, with its gigantic industry, comes up to Campania with 484 to the square mile. While Prussia had in 1895 233 inhabitants to the square mile, Italy had 271, and thus is relatively the richer in men of the two.

The numbers of the population in the seventy towns of more than 7000 inhabitants, according to the division into communes and walled towns, are given in the Statistical Appendix. The large increase in

the number of inhabitants—combined with the already somewhat dense population obliges hundreds of thousands every year to seek their fortune abroad, and to emigrate permanently or for a time. The land adapted for cultivation is almost completely occupied and can scarcely support a larger number of people under the present high rents and oppressive taxes. Industrial pursuits are only just beginning to develop; they attract some thousands of additional hands every year, but still there is not bread enough for all at home. The frugality and simple manner of living, the lower wages required in consequence, the great endurance and industry of the Italians of the lower classes, have carried them into all countries and continents. The southern Italians and Sicilians have found employment by the hundred thousand in the fields of America as skilled labourers, and have often become prosperous. Human labour from Italy and capital from England have extorted from the soil of Argentina those stores of corn about which the landed interest in Europe is sighing. (There were 700,000 resident in Argentina in 1897.) Brazil and the Southern States of North America are flooded with these immigrants, who have made themselves thoroughly hated and feared both by the low wages they require and by the tendency to form secret societies which they have taken with them over the ocean. Italian labourers were employed in great numbers in boring the St. Gothard Tunnel; they were made use of in digging the Canal from the North Sea to the Baltic and that from the Trave to the Elbe; troops of them were to be met with in Germany during the construction of all the large railways, and in the South of France on similar occasions they made themselves talked of by the violent contests with the native workmen (Massacre of the Italians in 1893 at Aigues Mortes) and they give Italian diplomatists plenty to do in settling, or compensating for, troubles of the kind. In the first half of March, 1898, not less than 3,000 emigrated to the South of Baden to seek work. The question has chiefly to do with bricklayers or navvies, who earn from a franc to a franc and a half a day at home but get from three to five marks in Germany. Now, if they stint themselves and live cheaply, as they generally do, they are able to put by something to take home with them in autumn or the beginning of winter. Much depends on their going away again at the right time so as not to have to use up their savings when work is scarce. The emigration is very great from some places; for example, in St. Fele (Basilicata) about a third of the houses were untenanted in 1890.

As a rule a contractor who has to supply workmen for foreign countries collects a number of people by means of agents and sends or conducts them to the place where they are needed. A certain percentage is paid as commission. The cost of transport is reduced by

special fares on the railways, and still more on the steamers, and this cost falls on the supplier of labour or the employer, according to agreement. Abroad the Italians content themselves with the simplest fare and the most wretched quarters in order to return home with their gains and rent a field or start a business, or to support their relations. Thus a sum of ready money amounting to several millions of lire comes every year into the country, and increases the national wealth, just as in Norway, where the Norwegian sailors or captains obtain by foreign service the means of supporting themselves in later life in their native country, whose poverty would otherwise prevent her from being able to support all her sons.

Very many of the emigrants state specifically that they are only leaving their country temporarily, and they are classified accordingly and are entered on the lists for military service (cf. the Statistical Appendix). Young fellows of fifteen emigrate, but often return to perform their military service, going out again later on. Thousands stay abroad where they are able to get work and a living, and in the States of America they feel themselves quite at home among the numerous Italian colonists. In Argentina (Buenos Ayres) the Italians have a theatre of their own, at which the most famous of their native actors appear; they have several Italian newspapers and they have Benevolent Societies whose resources have more than once come to the aid of the Mother Country in times of calamity, as for instance after the Calabrian earthquake in 1894. All families have relatives beyond the ocean, and these naturally attract others after them, so that the contractors who reside there have little difficulty in obtaining any required number of workmen from home. The fact that men come from the same commune or that they were born in the same province plays an important part, as the young people are far more ready to trust their fellow townsmen or those from the same district than any others. As the women and girls, too, do not shrink from the voyage across the great water, the emigrants are able to find suitable wives, and to keep up the nationality of their children. In La Plata they are acquiring such an influence that the governing parties have to take much account of this Italian element. In 1895 nearly two millions of Italians were living out of Italy. The emigrants numbered in—

1882	161,252	1887	215,665	1892	223,667
1883	169,001	1888	290,736	1893	246,751
1884	147,017	1889	218,412	1894	225,323
1885	157,193	1890	217,244	1895	293,181
1886	167,829	1891	293,631	1896	306,127

Of these the following were temporary :—

1892	1893	1894	1895	1896
11,6298	122,430	119,868	123,668	123,862

Nearly one half of the whole number. The next table gives the destination of the emigrants. We see from it that the stream of men in search of work sets most strongly towards France among European countries, at times equalling the emigration to the whole of America. A great number go to Austria-Hungary, especially at harvest time, the farms there being much in want of manual labour. Then follow Germany and Switzerland, while the whole of the emigration to the North of Europe is inconsiderable. In Africa it is confined to the coast lands of the Mediterranean, flourishing Italian settlements existing in Algiers, Tunis and Tripoli, as well as in Syria, further on. These have their churches, schools, etc., and are constantly being reinforced from home. The jealousy of the French and Italians in Tripoli and Tunis is well known and has again and again had an important influence on the general politics of the two countries. The countries of the Eastern Mediterranean were for a long time considered as the special domain of the Italians, till other powers gained pre-eminence over them. America has been alluded to; Asia and Australia harbour few Italians as yet. The numbers of the table on the other page vary from year to year, often by several thousands, in connexion with the demand for cheap labour caused by new undertakings on a large scale, as in Germany during the construction of the Baltic Canal in the eighties.

Against this admixture of Italians in foreign countries is to be set only a very small number of foreigners at home. These are chiefly engaged in trade and manufactures, as there is a plentiful supply of native working men, and foreigners are not so easily contented and so reasonable in their demands. These foreigners, it is true, have taken possession of a considerable part of the export and import trade. In 1882 there were residing in the country—

Frenchmen . . .	140,000	Germans . . .	25,000
Albanians . . .	55,000	Catalonians . . .	7,000
Slavs . . .	30,000	English and Americans	23,000
Greeks . . .	30,000		

The greater part of these, however, are Italian subjects as there are French “enclaves” in Piedmont and German in the district of Verona. Along the east coast there are Albanians and Greeks in the neighbourhood of Monte Volturno, in the Terra d’Otranto and in four communes of Sicily, while in Sardinia there are Spaniards. The Albanians came into the country in the fifteenth century, at the time of Scanderbeg, and they have shared all turns of fortune with the

modern Italians. Catalanians have been domiciled in Sardinia since the Spanish rule over Southern Italy, and the Slavs (of Friuli) were taken over at the cession of Venetia. The number of actual foreigners residing in the country in 1881 was much less, being as follows :—

Austrians . . . . .	15,790	Argentiniens . . . . .	354
Swiss . . . . .	12,104	Hungarians . . . . .	302
French . . . . .	10,781	Netherlanders . . . . .	204
English . . . . .	7,302	Egyptians . . . . .	194
Germans . . . . .	5,234	Brazilians . . . . .	193
Russians . . . . .	1,387	Danes . . . . .	168
North Americans . . . . .	1,286	Tunisians . . . . .	116
Greeks . . . . .	1,212	Mexicans . . . . .	95
Spaniards . . . . .	922	Portuguese . . . . .	76
Turks . . . . .	694	Roumanians . . . . .	57
Belgians . . . . .	583	Others . . . . .	461
Swedes . . . . .	441		
Total . . . . .	59,956		

On the other hand the number of foreigners who visited the land that year for the sake of its Art treasures, its beautiful scenery or its mild climate, may be put down without exaggeration at half a million, so that this kind of intercourse is of the greatest importance to the country economically, as it directly introduces ready money.

Families are usually numerous. The Italians marry as early as possible and on scanty incomes in consequence of their frugality. Family feeling is strong, and young men are not very comfortable in Italian taverns. In recruiting it is found that many of the young men of twenty and twenty-one years old are fathers of a family and are rejected in consequence. The following table of Births, Deaths and Marriages for the years 1888-96 shows at a glance that the excess of births over deaths is only so great because so many people die abroad owing to emigration, but still the increase of population has sufficed to raise it from twenty-eight to thirty-one millions during the last twenty years.

# ITALIANS RESIDING ABROAD

	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891
Austria . . . . .	12,101	17,252	22,256	16,062	10,166	28,501	23,916	25,670	31,241	25,629
Hungary . . . . .	8,329	9,535	10,470	10,744	13,181	7,130	8,032	6,716	6,946	11,866
Switzerland . . . . .	8,476	6,346	5,509	4,583	4,346	5,130	6,237	9,163	10,707	13,195
France . . . . .	53,037	46,768	38,523	33,438	35,706	31,185	27,882	27,487	20,310	31,248
Belgium and Holland . . . . .	271	543	218	1,386	134	470	188	243	150	206
Germany . . . . .	7,662	12,376	4,271	4,532	3,811	4,676	10,105	17,951	15,215	13,880
Great Britain . . . . .	512	379	336	486	349	675	553	523	842	773
Scandinavia . . . . .	12	77	29	30	10	14	29	4	138	173
Russia . . . . .	218	328	214	255	281	366	315	283	251	257
Spain and Portugal . . . . .	1,252	931	580	826	900	900	583	837	380	457
Servia, Roumania, Turkey . . . . .	1,512	3,839	4,707	3,877	1,789	2,010	3,217	2,280	3,630	4,733
Elsewhere in Europe . . . . .	548	289	475	1,110	733	887	1,884	1,474	1,449	1,468
Egypt . . . . .	2,213	1,374	850	1,194	740	867	1,436	773	754	830
Tunis . . . . .	2,235	1,867	637	818	1,557	633	902	639	522	583
Algeria . . . . .	3,325	2,882	1,636	3,423	2,243	1,375	751	765	744	718
Africa . . . . .	7,773	6,123	3,123	5,435	4,540	2,875	3,089	(2,177)	(2,020)	(2,131)
United States and Canada . . . . .	18,669	21,337	10,847	13,066	28,640	38,853	34,292	25,811	48,010	44,522
La Plata . . . . .	24,526	26,075	34,016	40,954	38,383	54,449	65,958	75,058	41,352	27,542
Brazil, Mexico, etc. . . . .	13,346	12,085	7,755	14,260	12,834	33,003	98,729	18,365	20,493	111,346
South America (country not stated) . . . . .	3,153	3,891	2,849	5,080	2,309	3,108	5,285	3,877	4,553	3,062
America . . . . .	59,694	(63,338)	(55,467)	(72,490)	(82,166)	(129,463)	(204,264)	(123,111)	(114,417)	(186,472)
Elsewhere . . . . .	164	925	869	1,036	717					
Total . . . . .	161,561	160,101	147,047	157,193	167,829	214,812	290,204	217,919	216,606	292,488

# POPULATION

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## BIRTHS, DEATHS, AND MARRIAGES IN ITALY

	Males	Births	Deaths	Excess of Births
1888	236,883	1,161,570	862,438	229,132
1889	230,451	1,163,142	812,013	381,129
1890	221,972	1,125,220	838,028	287,192
1891	227,656	1,176,490	839,687	336,812
1892	228,572	1,155,331	847,537	307,794
1893	228,103	1,172,550	822,967	349,593
1894	231,581	1,149,191	822,628	326,563
1895	228,162	1,062,102	783,813	308,289
1896	222,003	1,095,505	758,129	337,376

## CHAPTER X

### History

THE history of this country, which has been important in every respect in its influence on the civilization of mankind, can only be treated here in its broadest outlines. It is only for the sake of completeness and of symmetry with the other volumes of the series that it is touched upon in a general way. Details must be relegated to the chapter on chorography.

Italy begins to take part in universal history from the time of the foundation of the Greek colonies in Sicily and Southern Italy. The first of these, Cumæ in the Gulf of Naples, built on an isolated trachyte rock opposite the island group of Ischia, is said by the ancients to have been founded in the eleventh century B.C. They say, and even if the date is not certain it is not an improbable one, that as early as the year 1000 B.C. certain Greeks landed on the Italian and Sicilian coasts and carried on trade with the natives. The Cumæans introduced the written characters which were adopted by the Etruscans and Italici, and became in a modified form the groundwork of the earliest native alphabets.

The Dorian migration in Greece gave the impulse for colonization on a larger scale. This, under the protection of the Delphic God, led to the foundation of flourishing communities, great in peace and war. The Chalcidians settled in the town of Naxos, near Mount Etna, in 735, and this again gave rise in 729 to Catania and Leontini. Zankle (Messina) and Rhegium date from 730, and Syracuse, the mightiest of all the cities of Sicily, was founded by the Corinthians in the same period (734). Syracuse flourished in spite of numerous internal constitutional struggles, and resisted all attempts at conquest by Carthage, by the other Sicilian Greeks and by the Athenians during the Peloponnesian War (415-413). Judging from the remains of its fortifications it must have been a mighty city, strongly fortified and with an excellent harbour, an impregnable sanctuary for the Sicilian Greeks. Sybaris seems to have been the most ancient city on the mainland (720) followed by Croton, Tarentum and others, so that the whole circumference of the Bay of Tarentum was in Greek hands, and it thus deserved its name of Magna Græcia.

These colonies found native inhabitants in possession. In Sicily there were Sicani and Siculi, agricultural tribes who had come over from the mainland. In the south of the mainland there were Sallentini

and Calabrians, who are considered to be related to the Romans, and the Messapians, a people closely resembling the inhabitants of Northern Greece. The Samnites lived in the interior, and at first had no intercourse with the colonies, while in the north of the peninsula flourished the rule of the Etruscans, whose trade jealousy prevented the Greeks from colonizing the coasts of the Tyrrhenian Sea north of the Neapolitan district. The Phocæan colony of Massalia, commenced 600 B.C., forms the only exception. The West of Sicily and the Western Mediterranean remained similarly closed to the Greeks, the warlike Carthaginians being the ruling power, and they contested Sicily with the Greeks until the commencement of the war with Rome which led to their annihilation.

The Etruscans were then the leading power in the north of the country, and bore uncontested sway as far as the Alps on one side and Southern Italy on the other. This mysterious people dwelt in cities, so placed as to form natural fortresses, and had their habitat in what is now called, after them, Etruria. There then existed a league of twelve cities, which possibly served as a pattern for the Latin League. The Etruscans, as already observed, were a warlike though commercial people, whose sway apparently extended overland to Northern Italy, but who may also have had relations with the Greek islanders of the earlier period. They obtained an alphabet from the Greeks and fitted it to their language, which they were continually compressing and abbreviating. Numerous inscriptions on tombs are in existence and the tomb chambers, often constructed with much care, give us, in conjunction with other sources of information, a tolerably sufficient knowledge of the life of the upper classes.

Side by side with pottery flourished bronze-founding, and the products of this industry reached as far as the Baltic by means of barter, indicating to us by single pieces the trade routes of the time. In exchange the Etruscans received amber, which is found in many of the tombs and seems to have been a highly esteemed and costly ornament. The nation borrowed the forms of its objects of art and the subjects represented on vessels, mirrors, etc., from the Greeks, but caricatured them in such a way that it is difficult to find really beautiful objects coming from Etruria. The countenances are distorted, the limbs are stretched out into almost impossible positions and the movements are stiff, as in the most ancient Greek Art. In addition to this there is a certain tendency to obscenity.

The ruling power was apparently in the hands of an Aristocracy, which must have exercised far-reaching influence over the people, as traces of Etruscan exclusiveness are to be found in the first century B.C., in the wars of Catiline and Perugia, each of which uprisings rested

on the support of an ancient Etruscan fortress—Fæsulæ or Perugia. The power of this nation was broken by the inroad of the Kelts in the north and the revolt of the Italian populations in the centre as well as the south of the country, in which the educating influence of the Greek colonies took an important share. A League of Latine cities is said to have been founded in the eighth century, and Rome under her kings gradually attained in it a leading position. The expulsion of the kings and the introduction of an Aristocratic government, with two consuls and a governing assembly, the Senate, caused internal dissensions which brought the Romans again under the rule of the Etruscans, until, after a long period of strife, the conditions were reversed and Rome with the Latines and Sabines conquered all round.

This development was interrupted by the Keltic invasion, which in the beginning of the fourth century descended on Italy from over the Alps. Rome was overwhelmed but soon recovered herself and drove back the Kelts, who then settled permanently in the Plain of the Po. No energetic attempts were made to Latinize them till after the Second Punic War. The powerful mountain tribes gave the Romans much trouble, as we learn from the accounts of the Samnite wars, the more so as these nations had just before destroyed the Etruscan rule in Campania and had laid hands on several of the Greek colonies. After the overthrow of the Samnites, Lucanians, and other nations of Southern Italy, the Greek towns on the coast necessarily became subject to Rome. Tarentum held out the last by inviting over Pyrrhus, the warlike but unstable King of Epirus, and made a successful stand during a series of years until it fell in 270 B.C., and Rome was acknowledged as the predominant power from the Apennines to the Straits of Messina.

This war with Tarentum had forced Rome, owing to the expedition of Pyrrhus to Sicily, to interfere in the politics and trade of the island. Since the overthrow of the Etruscans the dominion of the Tyrrhenian Sea had fallen into the hands of Rome. Thus she became a rival of Carthage, who had treated the Western Mediterranean from Africa and Sicily onwards as her own domain and had made the utmost of it. Assistance given to the Greeks of Sicily and an alliance with the Mamertines of Messina brought about a conflict with Carthage, leading to the First Punic War and a delimitation of the respective spheres of influence. Carthage surrendered the island but compensated herself richly in Spain. Sicily was shared between Rome and Hiero of Syracuse, and became the first Roman Province.

The augmentation of the Carthaginian power in the west supplied the means for the daring expedition of Hannibal over the Pyrenees and the Alps into Northern Italy, where the rule of the Romans was

not yet fully recognized and where allies might be looked for after decisive victories. This Second Punic War, with its ruinous blows at the Roman power, turned out ultimately in favour of Rome, in consequence of the insufficient support given to Hannibal by his native city, and of the valour of the Latine townsmen: the sea power of Carthage was annihilated and the Western Mediterranean district (Spain and the South of Gaul) came into the possession of Rome. This war is at the same time the first event of Italian history the important details of which are really historic, the information we possess of the preceding periods, partly derived from legends, partly from the later reconstruction and supplementing of oral tradition, being doubtful and in many respects disputable.

How Rome extended her empire during the second and first centuries B.C., how she subdued Greece, Asia Minor, Syria, Egypt, Gaul and Germany, belongs to the history of Rome, and only interests us by its reaction on the home country, Italy. The first result was the contest with the Italian allies, who were overwhelmed with burdens and endowed with few privileges. This is called the Social War, and ended in the extension of the rights of citizenship to all the Italici. Then came the power of wealth, which flowed from all sides into the Capital and ruined domestic agriculture, the extension of the system of slavery in town and country, with the repeated risings of the slaves in Italy and Sicily, risings which it required all the strength of the State to suppress, the continually increasing strife between rich and poor, between the ruling families and the town population, accustomed as it was to food at the State's expense and to bribery at election time, leading to the disappearance of the free peasantry and the middle class. It further became evident that the Roman aristocracy, which was indeed only a limited city nobility, had not sufficient unity to rule a universal empire such as that of Rome, and to keep itself clear of party interests. Already the disturbances of the Gracchi in the second century B.C., the civil wars between Marius and Sulla, and the conspiracy of Catiline, showed the need of a united strict administration such as Cæsar attempted to form and his nephew Augustus successfully carried out after devastating civil wars and the banishment of all his opponents.

The Roman Empire dates from 30 B.C. In the following century it rendered undeniable service by extending the rights of citizenship to the whole of the state, by its strict administration and profound internal peace. Greek culture, as is well known, had already conquered the entire life of Rome and had given rise to Roman literature. Of course, side by side with this education crept in also oriental manners and modes of government, such as the deification of the Emperors,

who came in time completely to resemble Asiatic despots, and this was one of the causes which led to the break-up of the Empire. The chief cause of this, however, is to be sought in the fearful and constantly increasing decrease of population which forced the Emperor to resort for recruits to the warlike barbarians living around, and thus to place in their hands the very weapons which were to bring the Empire to ruin.

In the third century the weakening of the imperial power and the reawakening of provincial independence led to disorders which, in spite of individual able warriors and rulers, brought about the division into a Greek Empire of the East and a Latin Empire of the West. The latter had Italy for its leading country and Rome for its capital. Among the nations, sometimes nomadic, dwelling on the northern frontiers the Germans were conspicuous. So early as the second century B.C. they had seriously endangered the Roman dominions by the inroad of the Cimbri and Teutones. Augustus had attempted their subjugation in vain. At a later time vast crowds of them enlisted in the Roman legions, which had become mere mercenary troops. When the defensive lines on the frontier fell, and fighting took place between claimants for the supreme power, the Germans thronged in in such numbers that in 476 A.D., Odoacer, the warrior king of the Heruli and Rugii was able to depose Romulus Augustulus, the Emperor of the West, and seat himself in his place. Ostrogoths and Visigoths, Vandals, Burgundians, Franks and Lombards, shared the rich booty and erected their ephemeral kingdoms on the ruins of the Western Empire. For half a century Italy, with Ravenna as its capital, formed part of the domain of the Ostrogoths till this was put an end to by the Greek Empire (553). Then for some centuries Southern Italy and Sicily were under Byzantine rule, which is recalled by the name *Basilicata*, king's country. Northern and Central Italy only belonged to this empire for a short time, as the Lombards, pressing in from the north, created a kingdom which embraced them both (568). Sardinia first fell into the hands of the Vandals, then into that of the Byzantine Emperors, and later still, under the power of the Saracens. The district of Rome was claimed for himself by the Bishop, who stepped forward as the heir of the Cæsars, though his province, that of the Spirit, was a different one from theirs.

The world has reason to thank the universal Empire of Rome for three things—the Roman jurisprudence, the Latin language, and the diffusion of Christianity. The importance of the Roman jurisprudence was first made apparent in the Middle Ages, after the Teutonic Customary Law had fallen into abeyance and the need of systematic law was more fully felt. The University of Bologna was the chief

seat of the study of Roman jurisprudence, which spread from it over the whole of Europe. The Latin language was diffused in all the lands of the Western Mediterranean as far as Germany and Gaul, and its dialects gave rise to the Romance languages (Spanish, Portuguese, French, Italian, Roumanian and Romanish). The prevalence of Latin in the West, like that of Greek in the East, smoothed the way for Christianity, which began to make way as soon as it was recognized by Constantine as a religion tolerated by the State, even before the battle of the Pons Mulvius (A.D. 312).

In the confusion caused by the migration of the nations, the only institutions which remained firm and lasted through all mutations were the city communities, with their bishops, and with their ecclesiastical and linguistic communion; and the Bishop of Rome received a special pre-eminence, Rome being the ancient Capital and the burial place of the Apostles Peter and Paul. This found expression in the proceedings of Leo the Great, who marched against the Huns and forced them to retire when they invaded Italy in 450. The Bishop of Rome was not, it is true, generally recognized at that time as the Patriarch of the Christian Church, as he had influential rivals in the Bishop of Milan, for the West, and the Bishops of Constantinople and Jerusalem for the East. On the occasion of the inroad of the Huns the inhabitants of Aquileia fled to the islands off the coast and there laid the foundations of Venice.

In the seventh century the Arabs conquered the Mediterranean countries, ravaged the coasts with their piratical craft, and finally planted themselves firmly in Sicily. This they completely subdued by 902, converted it into an Emirate and used it as a fulcrum for further conquests on the mainland of Southern Italy. The rest of Italy, with the exception of the district of Rome, was subject to the Lombards, who had founded a series of dukedoms reaching from the Alps to Salerno. Their kings resided in Pavia, which then put Rome into the shade, but were not strong enough to put a stop to the feuds of their mighty vassals.

The longing in such unquiet times for the order of the early Roman emperors is easy to understand, as well as the wish to have rest and peace by the restoration of the Empire. Tradition proved itself so powerful that the Bishop of Rome, acting in his venerable office in a certain measure as the only successor of the Cæsars, had the courage to place the imperial crown on the head of Charles, the Frankish King, and thus inaugurate a new era for Italy, one, however, that was not destined to have a peaceful development. Strife with the King of the Lombards had brought the Franks to Italy, where the Bishops of Rome, groaning under the Lombard yoke and surrounded by the

provinces of that kingdom, became their natural allies. The pretended donation of Pepin, called the *Patrimonium Petri*, laid the foundation of the States of the Church, but at the same time gave occasion to the thousand years' war against the neighbouring rulers or potentates, which was put an end to for the present by the events of 1870. The crowning of the most powerful monarch of the time, who had restored peace in a certain measure throughout his wide domain, was a circumstance full of significance for the whole Christian world. For those imperial claims and privileges were thus revived both as regards king and bishop, which were only too soon to bring the secular and ecclesiastical powers into the bitterest conflict.

First of all, Northern and Central Italy became a part of the Carolingian Empire, then after the death of Louis the Pious it belonged to Lotharingia, and after the Treaty of Verdun (843), in spite of the expeditions of Arnulf, it remained subject to the influence of the Burgundian monarch for a considerable time. The Saxon kings resumed the policy of Charlemagne so far as the condition of Germany permitted, and Otho the First interfered in the affairs of Italy with a strong hand. In 962 he had himself crowned Emperor as Roman King of the German nation,<sup>1</sup> and sought to acquire the Byzantine region of Southern Italy for this son (Otho II) by means of a marriage, so that after a long interval the whole of the Italian mainland would have again obeyed a single ruler. It is true that this Empire rested on a very different foundation from that of its predecessor. The imperial dignity was only valid after coronation by the Pope and bestowed on its owner splendour but no power. His power depended on the support of his vassals, who were bound indeed to render military service, but the strongest of them were so independent that force had frequently to be used to compel them to fulfil their duties. Then there were the free communities in Italy who were more or less independent, and the religious institutions and monasteries which were endowed with privileges and thus formed free bishoprics; in short there was a diversity which, considering the small power of the Emperor, made it very improbable that these elements could ever be welded together.

Thus it happened that Otho II and Otho III were unable to obtain a lasting hold on the Byzantine possessions, all the more so as the Saracens were still advancing in power on the one hand, and on the other hand troubles north of the Alps were continually drawing the Emperors away from this undertaking. Then the trade of Italy with the Levant began to flourish, and this brought several coast towns into importance, and at a later time influenced towns in the interior

<sup>1</sup> Römischer Kaiser der deutschen Nation. (Trans.)

as well. Salerno, Gaeta, and still more Amalfi, carried on trade with Greece, Syria and Egypt. In the place of Salerno, which sank into a state of dependence, came Genoa, and later still Pisa. Amalfi, built on the steep southern coast of the peninsula of Sorrentum and protected from hostile attacks by high mountains and difficult passes, was a republic and a maritime power under a Byzantine protectorate. Flavio Gioia, one of her citizens, is said to have invented the mariner's compass and thus made possible the navigation of the high seas. This can scarcely be correct, as this instrument had been mentioned before that time, but it may serve as a sign of the renown enjoyed by the people of Amalfi as mariners.

The Venetians, who navigated the Adriatic and endeavoured to secure the monopoly of trade with Greece, were already the rivals of Amalfi. The men of Genoa and Pisa drove the Saracens from Sardinia, where they had settled, and swept them from the Mediterranean before also striking into the trade routes to the East. At the time of the Crusades the Genoese and the Venetians held the whole trade in their hands. Amalfi decreased in importance after it fell into the hands of a new power which emerged in Southern Italy, the Normans, and by 1131 had sunk into a state of dependence. Between 1061 and 1091 Roger and Robert Guiscard conquered the island of Sicily and drove away the Saracens, the Pope, Nicholas II, having formally invested them with all conquests they might make in Southern Italy, in the hope that he might find them a support against the Empire, which was then showing renewed energy. The contest between the spiritual and secular powers had burst forth violently under the influence of the reforms introduced by the Monks of Cluny. Henry III had indeed asserted all his claims once more and had raised and deposed popes at his pleasure. During the minority of his son Henry IV, however, the advantage thus gained was lost, and it is well known how the Emperor was excommunicated and forced to do penance before Pope Gregory VII at Canossa.

In this strife between the Emperor and the Church, the prosperous towns of Northern and Central Italy were making themselves more and more independent of the tutelage of the nobility and the imperial governors. Henry III had already fallen into difficulties in dealing with the cities, and the attempts of his son on the communities of Northern Italy associated in the first Lombard League, were doomed to failure. Milan took its place at the head of this league, and subsequently offered successful defiance to the different Emperors, remaining a respectable power even after its destruction by Frederick Barbarossa in 1162.

In Southern Italy the Normans had extended their rule and had

created a united kingdom of Sicily, which pressed forward victoriously towards the East, and thus came into conflict with the Byzantines and Venetians. Its relations with the Papacy, too, did not remain satisfactory. Robert Guiscard had indeed afforded protection to Gregory VII when menaced by Henry IV, but had carried him as a kind of prisoner to Salerno, where he died. His successor, Roger II, was no less a menace to the power and temporal sway of the Papal See than the Emperor, and the Pope applied in vain for help to Lothair von Supplinburg.

After the abandonment of Italy by Conrad III, Frederick Barbarossa attempted, at first with the support of the Pope, to make the imperial power once more effective in that country. By force and negotiation he succeeded in reducing the powerful cities of Northern Italy and forcing them to receive imperial governors, a measure however which could not be carried out until after the subjugation of Milan. His dominion was of short duration, as the cities rose against this state of tutelage and formed a second Lombard League, which defeated the Emperor near Legnano in 1176, and forced him to acknowledge the communities as independent as to government and right of making war, though still subject to a fixed tribute.

The Empire attained its greatest power in Italy when Henry VI, who married the heiress of the Sicilian kingdom, subjugated the lands of Southern Italy, and hemmed in the Pope on all sides with imperial possessions. The feuds between Guelphs and Ghibellines in the several cities began to break out at this time, and continued under various party names for over a century. In 1198, on the early death of Henry VI, Pope Innocent III sought to place a bar on the threatening supremacy of the Hohenstaufen by the favour of the Guelphs, but was only temporarily successful, as Frederic II was recognised as King of Germany and Sicily and made good his claims with great energy and without regard to the Papal See. The resuscitated Lombard League was defeated by him in the battle of Cortennova in 1237, but he was unsuccessful at sea, and finally he saw all his plans shipwrecked (1250). His reign was a time of high prosperity in Sicily. At the Court of Palermo art and science were practised and jurisprudence and law placed, with the help of the Arabs, on a firm foundation. The estates of the realm received a regular constitution with clearly defined rights and duties, and the University of Naples was established as the first State University as opposed to private or ecclesiastical institutions (1224).

In the interregnum after Frederic's death, Manfred endeavoured to gain the inheritance of the Hohenstaufen, but was beaten by Charles of Anjou, at Beneventum, in 1266. After the execution of Conradin

at Naples, Southern Italy and Sicily fell to the Dukes of Anjou, the Pope obtained a free hand in Central Italy, and in Northern Italy the noble families gradually acquired rule over the cities after violent party warfare. These internal struggles were especially embittered in Florence, where Dante Allighieri, the greatest Italian then living, became involved in them, had to go into banishment and remained in banishment till his death.

The fourteenth century was an age of the greatest confusion. Sicily had been again lost by the Dukes of Anjou, and formed a kingdom of its own under sovereigns of the House of Arragon, the only legitimate heirs of the Hohenstaufen, after the hatred of the Sicilians to the French had glutted itself in the bloody scenes of the Sicilian Vespers (March 31, 1282). In Southern Italy, however, the Angevin rule flourished and Naples, under Robert the Wise, became a centre of culture and art. The Popes were violently driven out from Rome and retired to Avignon (1309-1377), thus falling into the power of the French kings, while the great families of Orsini and Colonna were at feud in Rome. The attempt of the people to gain freedom and self-government which was seen in the rise of the popular Tribune Cola di Rienzi proved abortive (1347). At the same time the Church was rent asunder, a second Pope was elected at Rome side by side with the one at Avignon, and the schism lasted into the fifteenth century (1377-1417). In Northern and Central Italy the towns were in continual conflict one with another, and finally fell into the hands of single potentates, such as the Visconti at Milan. In these wars they no longer depended on their own strength, but took mercenaries into their service, the leaders of which (Condottieri) often seized supreme power in the towns. At the beginning of the century, the Emperors, Henry VII and Louis the Bavarian, once more undertook expeditions to Rome but without permanent result. Venice was supreme on the Adriatic. She subdued the hinterland as far as Brescia and offered powerful resistance to the Saracens in Greece, but lived in a state of constant friction with Genoa in trade. This last named city possessed the coast of Liguria, while inland extended the dominions of the Markgraves of Montferrat, and still further inland the Dukes of Savoy were rising into importance and slowly laying the foundation for their subsequent rise to the regal dignity.

The interference of France in the affairs of Italy went on during the second half of the fifteenth century under Charles VIII and Louis XII; at the same time Spain put in an appearance as a conquering power, as a consequence of the hereditary claims in Southern Italy on the part of Aragon, and the two powers subsequently came into collision in the wars between Francis I and Charles V, in which France was

worsted. The feuds in Northern Italy between Milan and Venice, as well as between Milan and Florence, continued, but the Sforzas had replaced the Visconti and the city of Florence had lost her freedom to the Medici family, under whose rule art attained its highest development and the life, the thought, and the science of antiquity enjoyed a brilliant revival in the Renaissance. At the same time Florence succeeded in overcoming her ancient rival Pisa and began to play a conspicuous part in the trade of the world. In spite of the temporary expulsion of the Medici and the restoration of the Republic under the influence of the Dominican monk Savonarola, the city was unable to maintain its independence permanently, so that after the vicissitudes of a century one of the Medici was established by the Spaniards as hereditary Duke in Florence. Thus was created the Duchy of Tuscany, which subsequently became an Archduchy.

In the States of the Church, although the schism was ended by the Council of Constance, the power of the Pope had receded, and the Court of Rome during the papacy of Alexander VI (Borgia) was given up to the most horrible intrigues of poison and dagger, until at the beginning of the sixteenth century the Pontifical States were rehabilitated by Julius II. Under this Pope and his successors Rome was raised by Bramante, Raphael and Michael Angelo to be the centre of art, in spite of the wars with the Spaniards. Sicily fell back under the sway of Aragon, the southern mainland forming an independent kingdom for some time after the establishment of the Aragonese in place of the Angevins. In this remarkable century the highest development of art was associated with corruption of morals, and the adoption of any means which might lead to the desired goal, and yet no one of the powers succeeded in gaining supremacy. Order of some kind was at length introduced by the wars of Charles V, who defeated and took prisoner his rival Francis I at the battle of Pavia in 1525, humbled Venice, plundered Rome, and extended his authority over Milan and Southern Italy. In spite of all the efforts of France, this authority was confirmed by the definitive treaty of Château Cambresis. The two last named countries remained subject to the crown of Spain until the war of the Spanish Succession, and were ruled by viceroys seated respectively at Milan and Naples.

Under the Spanish rule the Reformation, which was spreading in Germany, was unable to make way in Italy. All movements of the kind were suppressed by the Inquisition in alliance with the secular power. Through the discovery of America and the sea route to India on the one hand, and the taking of Constantinople by the Turks and the increase of their power in the Eastern Mediterranean on the other, the trade with the Levant declined, and with it the powerful

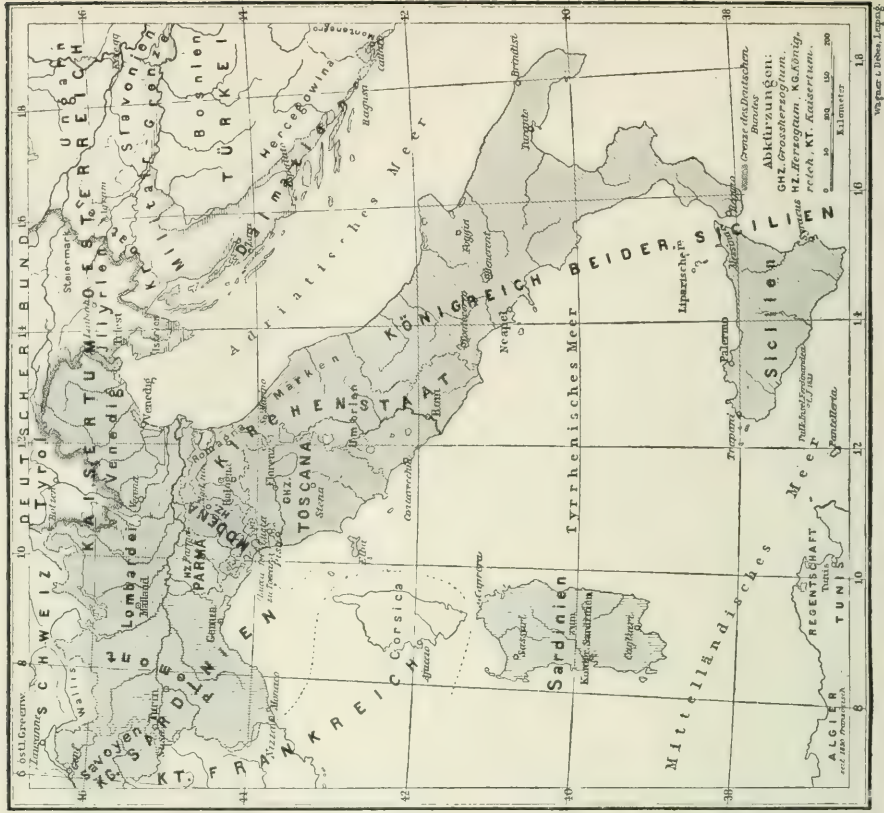
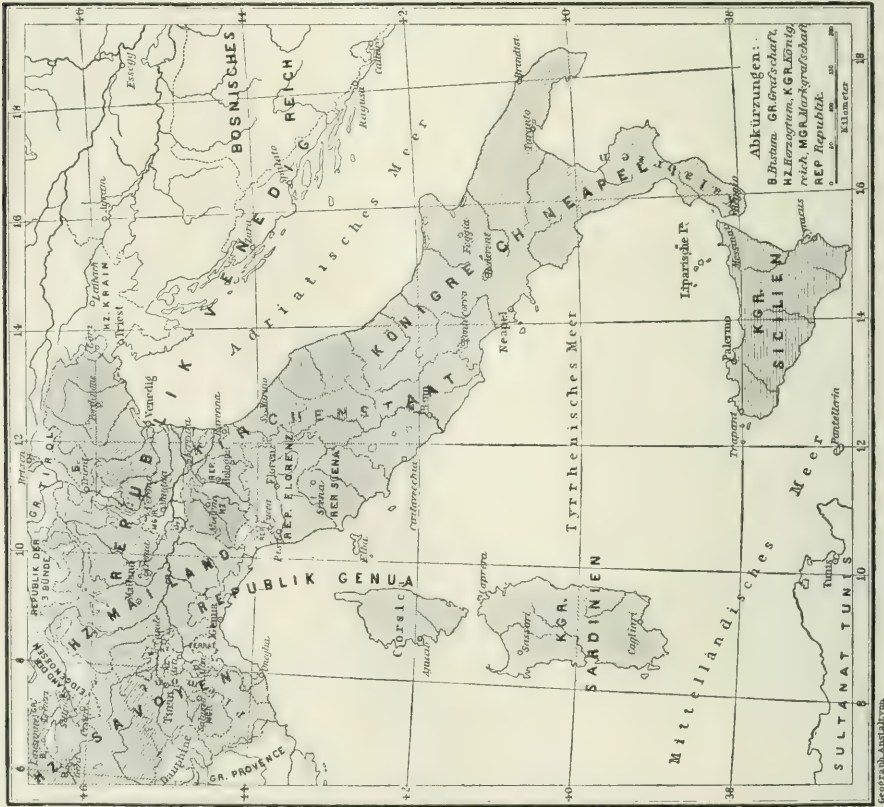
position of Venice and Genoa, who had largely added to their oriental possessions during the Crusades, with the assistance of the Crusaders. The Latin Empire, 1204, was a creation of the Venetians, who in power and dominions were a match for the German king at that time and till the sixteenth century, maintaining factories and ambassadors everywhere. The Genoese had made head even against Frederic II and for a long time held exclusive sway over the Black Sea. But after the discovery of America goods came direct by the sea route under the Spanish or Portuguese, and at a later time the Dutch and English flags, into the markets of Central Europe, and generally speaking as this trade increased the commerce of Italy with the East declined. The two republics clung to their old forms of government, and in Venice was developed that absolute and cruel government by State inquisitors which only succeeded in maintaining the order of the city and the rule over the subject mainland by means of violence, until this State and that of Genoa were swept away by the French revolutionary armies.

In addition to the Dukes of Montferrat the Dukes of Savoy had come to the front during the struggle between France and Spain. They then greatly extended their dominions in the wars at the beginning of the eighteenth century, in the war of the Spanish Succession and in the wars up to 1748, both by inheritance and by the fortune of war. They obtained Piedmont, Lomellina and Sicily, the last of which they subsequently exchanged for Sardinia. In these last named wars, Spanish rule was replaced by that of Austria, which wrung Lombardy from the Spanish inheritance, and the husband of Maria Theresa was made Grand Duke of Tuscany. Southern Italy with Sicily, as well as Parma and Piacenza, became independent appanages of the Estes and the younger branch of the Bourbons, never again to be united with Spain. Peace ruled in the country from the Treaty of Aix la Chapelle, Tuscany and Savoy flourished under upright government, and even Southern Italy recovered, during the reign of Charles III, from the oppressive government of the viceroys. It was only in the States of the Church that incurable misgovernment existed, and this was not touched or improved by the time of enlightenment at the end of the century. Corsica passed to France by purchase from Genoa, and remained in a state of revolt against her for a long time. Art and literature were depressed in the eighteenth century, or were dissipated in tasteless follies, partly in imitation of France; on the other hand a fresh breeze was wafted into Government and ecclesiastical affairs, when the enlightened princes Charles Emanuel III of Savoy, Leopold I of Tuscany, and Charles III of Naples, ruthlessly swept away numerous ecclesiastical and feudal privileges, made new roads, and checked the extortionate bureaucracy.

The French Revolution affected Italy as well as Germany. The victories of Napoleon Bonaparte from 1796 onwards created the Ligurian, the Cispadane and then the Cisalpine Republics in Northern Italy, and later on the Free State of Rome, till, after much exchange of lands and fresh wars against Austria, Piedmont and Liguria were united to France, and Northern Italy, with Milan for capital, was raised into a kingdom, with which the Emperor Napoleon endowed his stepson Eugene Beauharnais. Southern Italy had at first maintained its independence, but finally after long troubles the Bourbons had to fly to Sicily and leave the mainland to Napoleon, who made it a kingdom, first for his brother Joseph and then for Joachim Murat. England held Sicily in her power and did not give it back to the Bourbons till after the Restoration. This time of uniform strenuous government by the French brought about some good in spite of the embargo of the Continental system and the continual menace of the English, in so far that it cleared away all internal impediments to trade and destroyed numberless oppressive mediæval regulations, while the idea of national unity was awakened. Murat had become the darling of his people and on this account he entertained hopes of keeping his throne after the fall of the Emperor. Among the statues of the kings of different dynasties set up in the palace at Naples, his statue has with justice been introduced. But his fate was decided in the same way as that of the other Napoleonic kings and dukes. The success of the opposite party obliged him to fly, and he was finally taken prisoner and put to death in an unsuccessful attempt to land in order to recover his throne.

After the Congress of Vienna, the old unhealthy conditions were brought back under the Austrian protectorate. The State of Sardinia recovered its former territory in Northern Italy, together with the island from which it takes its name, the Bourbons were reinstated in Southern Italy and there carried on an absolute rule despite all promises of a Constitution. The States of the Church embraced Latium, Umbria, the Marches and Bologna, a Habsburg ruled as Grand Duke in Tuscany, Austria held Lombardy and Venice, and three small dukedoms, Parma, Modena and Lucca, were interposed between the States of Northern and Central Italy. One of these, Lucca, came to Tuscany in 1847. In this partition no one regarded the wishes of the people. These felt the return of this condition of affairs and the state of tutelage under a foreign power to be unendurable and sought in vain to resist by means of secret societies (*carbonari*) and repeated risings. The only result of the revolutions of 1830 was increased oppression. The rising of 1848 brought about nothing better, though even the Pope, Pius IX, placed himself at the head of the move-

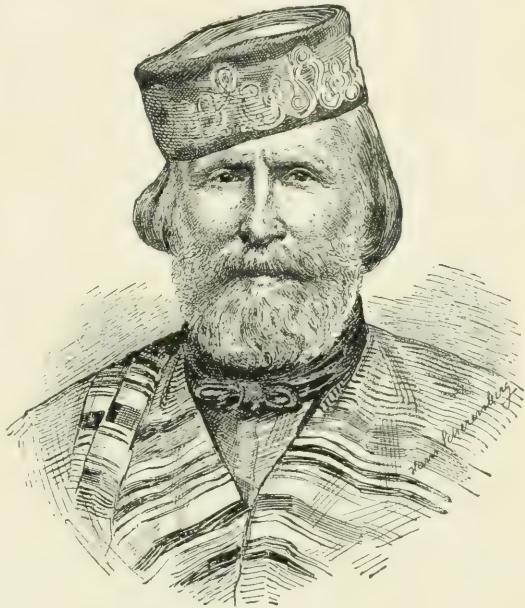




HISTORICAL MAP OF ITALY, FROM THE FIFTEENTH CENTURY AND BEFORE 1859.

ment for unity, and not only did Sicily rise against the misgovernment of the Bourbons but Northern Italy and Tuscany were in full insurrection against the Austrians. In the battle of Novara, 1849, Radetzky forced Charles Albert of Sardinia, protagonist of the Italian cause, to give up his plans, on which he abdicated in favour of his son. Lombardy, Venice and Tuscany were reduced with great severity and Sicily was brought back under the rule of the Bourbons after the surrender of the insurgents at Catania.

But the impulse towards unity proved stronger than the power of the foreigner. Victor Emanuel, the new King of Sardinia, was clever enough to lay Napoleon III under an obligation by taking part in the Crimean war, and only awaited a favourable moment to unfurl once more the national banner. The antagonism between France and Austria in 1859 gave him the opportunity. After the battles of Magenta and Solferino, Lombardy was handed over to Sardinia by the peace of Villafranca, though this power had to give up Savoy and Nice to France in payment for its assistance. During the war the inhabitants of Tuscany, Parma, Modena, and the Marches drove out their princes, established a national government, and demanded annexation to



GIUSEPPE GARIBALDI.

Piedmont in a plebiscite. In Southern Italy, the government of the Bourbons collapsed at the same time before a body of a thousand volunteers (*i mille*) landed by Giuseppe Garibaldi at Marsala. The islanders rose as one man, numbers of enthusiastic volunteers poured in to join the little band, which conquered Sicily almost without opposition and crossed to the mainland. Although Francis II, the last of the Bourbons, proclaimed a Constitution, the friends of unity, organised by secret societies (*camorra*), joined Garibaldi, so that he was able to enter Naples without a blow. Victor Emanuel and his great minister Cavour made use of this moment to strike in and to take in

hand the completion of the conquest by forcing the line of the Volturno and taking Gaeta. The success of Garibaldi's enterprise, however, was insured, and Victor Emanuel was proclaimed King of Italy, and recognised as sovereign of the whole country with the exception of Venice and the States of the Church.

The war of 1866 gave the province of Venetia to the young kingdom through the victory of Prussia, in spite of her own defeats at Custoza and Lissa, while the States of the Church, which had remained under the protection of France since the revolution of 1848, were described by Napoleon with words of menace as not to be interfered with. In order to get rid of the French occupation, Victor Emanuel in the Treaty of September declared himself ready to transfer the seat of Government from Turin to Florence and to guarantee the Pope against insurrections and attacks from without. But when Garibaldi in 1867 invaded the States of the Church with a body of volunteers, the French returned and defeated the irregulars at Mentana. The refusal of Napoleon to allow the incorporation of the States of the Church with Italy finally prevented Victor Emanuel from entering into an alliance with France in 1870. As soon as the obstacles interposed by France were removed by the decisive battles in August, the King took action, and, after a conflict in the Porta Pia, occupied the city. Annexation to Italy was voted by a plebiscite and Rome was made the capital of the kingdom. Shortly before this, the infallibility of the Pope, and consequently his independence of the councils in ecclesiastical affairs had been declared by an illustrious Œcumenical Council. Pius IX fell back into the position of the "Prisoner of the Vatican," making strong protests against the spoliation and violence, and continued till his death to assert his claims on Rome and the States of the Church. The national party, the overwhelming mass of the people, in the face of all these utterances on the part of the Pope, are determined that Rome shall continue to be the capital of the country (*Roma intangibile*) and direct their policy accordingly. A certain number of rights were accorded to the Pope, especially full sovereignty within his palace, and thus a *modus vivendi* was set up enabling the two powers to live side by side, although the Papal See has never acknowledged the new order of things.

Italy has followed the example of other powers in striving to establish colonial possessions, and in 1885 she occupied Massowah. This entailed a contest with the rulers of Ethiopia which lasted many years; and in which the Italians suffered some defeats (1887-1888), but in consequence of the contest for the throne of Ethiopia, they obtained a wide extension of territory and the protectorate over Abyssinia. These territories received the name of the Erythræan Colony, and

stretched back as far as the highlands of Tigre. Italy, however, had to give up both the highlands and also the Protectorate, after her serious defeat in the battle of Abba Garima, near Adowa, as she did not possess the means of repairing the disaster, so that at present this Colony is confined to Massowah and the surrounding districts. Besides this, the countries of Houssa and Danakil, and the peninsula of Somaliland from the river Juba to the Gulf of Aden are under Italian protection.' In 1897 Italy had a protectorate of 96,600 square miles and 195,000 inhabitants.

In European politics Italy leaned at first to the side of France after 1870. But when, after the Treaty of Berlin in 1879, France laid hands on Tunis (1881) which had belonged till then to the Italian sphere of influence, the successive Ministries found themselves forced, in spite of their differences in other matters, to seek entrance into the alliance that had been concluded between Austria and Germany. The antagonism to Austria, which had existed since 1859 and 1866, was of necessity laid aside, the claims on the Italian speaking provinces of Istria and Trieste were officially abandoned, measures being taken against the then active society of the Irredentists; and Italy associated herself with the two Powers, at first as a protected power and then, since 1890, on equal terms. This is the position of the existing Triple Alliance, which has survived all the attacks of the friends of France in the Italian Parliament and all the changes of Ministry. France replied in 1888 with the abrogation of the commercial treaty, which was a heavy blow to the Italian export trade, a blow from which the country only recovered after some years by means of increased exports to Germany and Austria.

Internally, Conservatives and Liberals have been contending together, the chief point, however, of all difficulties during the past two decades having been the condition of the finances. This was much improved in the seventies, but became worse again and has brought Italy more than once to the verge of bankruptcy.

## CHAPTER XI

### Products

WE have already had occasion in several places to allude to the products of the country and to name some of them, especially when treating of the flora and fauna. They are partly inorganic, coming from the ground, as metallic ores, marble and sulphur, partly organic, such as lemons, oranges and tunnies. It is best to take them in this order: first the minerals, then such as arise from plants, and finally those from animals; and in these last two groups to treat also of the economical aspects of forest, meadow and arable land, of fisheries and of silkworm raising.

#### I. USEFUL MINERALS

The first thing to be mentioned in this division of the subject is that Italy possesses very little coal. The effect which the almost entire absence of this subterranean wealth exerts on the most different branches of industry and husbandry will appear often enough. A few indifferent seams belonging to the Permian formation are to be found in the upper valley of the Trompia, some lignite is worked in the Apennines, at Borgotaro in Tuscany, at Monte Bamboli, at Agnara in Calabria, and at Iglesias in the South of Sardinia. In all 266,300 tons of coal and lignite were produced in 1884, in value about £760,000. Northern Italy receives a great part of its supply over Mount St. Gothard, from the coalfields of Saarbrück, and long trains of coal-trucks pass daily along the valleys of the Reuss and the Ticino in unbroken succession. Elsewhere the coal comes from England by sea, and when we come to Turin we find it competing with German coal owing to the low freights at sea and the costliness of land carriage. As Italy has a long coastline with railways from one harbour to another, and the distances inland are nowhere great, this fuel is delivered wherever it is required, with comparative ease. Most of the work has to be performed by coal, water power being only available to a small extent, and of this the utmost use has been already made. It is not even possible to look forward to the alternation of the tides as means of producing the force required for manufacture, as the difference between high and low tide is so inconsiderable. The Italian railways often burn compressed coal dust (*combustibili agglomerati*, 518,000 tons in 1894, value £640,000) made from the refuse of the gas works, which gives off a loathsome yellow smoke. As to gas for lighting, Italy is evidently dependent on English coal, but where gasworks have not yet been

erected it is cheaper to use electric generating stations worked by coal, as in that way the fuel is used up far more advantageously. This has already been done at Avellino and will be carried out in the same manner in many small towns. In some districts of the plain of the Po, chiefly at the foot of the Alps in the district of the moraines, peat has been formed in the bed of dried up ponds and lakes, which is taken by the inhabitants as a cheap and welcome fuel. Beds of turf are scanty in the rest of the country, partly because the peat cannot stand the heat and occasional droughts. The yield amounted to nearly 34,000 tons in 1894, in value £19,000.

Petroleum is scarcely found at all in Italy (2,800 tons, value £33,900). American oil is consequently imported, and for the last twenty years Russian also. But as the yield of olive oil is very considerable and the people in the interior burn it in their somewhat antiquated lamps almost exclusively, the importation of this article is not so important as in Germany. The Government has placed a high duty on the importation of petroleum, as this falls solely on the well-to-do, who are not content with the indifferent light of the flickering oil lamps. Besides this the long winter nights are unknown in Italy, and people go to bed early. Russian petroleum is imported in small chests containing two rectangular tin cans of two gallons each. American oil is put up in casks, and is subsequently drawn off into similar tin cans.

Of asphalte, out of which petroleum might have been obtained by distillation, there is also very little in Italy. There are a few asphalte mines in Tuscany, in the valley of the Sacco, and in Calabria, but the mine at Giffoni, not far from Salerno in the province of Naples, is now exhausted; that on Lake Neftia in Sicily yielding oil and bitumen is too small to be worked profitably.

A French company obtains asphalte at Ragusa and has survived the rise in duty which took place in 1888. The following small table gives the yield together with the value and the number of workmen employed :—

	Tons	Value	Workmen
1888	9,933	£8,091	205
1890	14,416	35,746	282
1892	25,536	24,960	320
1894	52,462	50,304	379

On a much smaller scale than this is the Simetite, an amber-like resin found in the valley of the Noto, and in the bed of the Simeto near Catania. Since ancient times this has been cut into beads and is distinguished from German amber by its splendid fluorescence. Pieces of the size of a hazel nut fetch ten to twelve francs and chains such as may be seen in the Mineralogical Museum at Catania command

a high price. Pure carbon in the form of graphite is found in veins of great purity in many Alpine rocks, but it is only at a few points that there would be the promise of profit from working it, and the small mines that exist at Pinerola must find it difficult to prolong their existence in face of the competition with Siberia.

Though Italy is deficient in coal and its allied substances, it has a fair number of different metallic ores buried in its mountains. The Noble Metals, it is true, especially gold, are met with only in small quantities, the commonest ores being zinc, lead and iron, which occur in remunerative quantities as pockets or veins in the crystallized rocks. Gold is, or used to be, washed in quantities scarcely worth considering from the sands of Alpine rivers. We have accurate returns from Piedmont, 1844-1857, which give as the result of thirteen years washing, 103 oz. of gold in fine flakes, 92½ per cent. pure, with 4½ per cent. of silver; the value was then reckoned at £452. In addition to this there is the gold obtained as a by-product of other ores, especially the auriferous quartz of the Western Alps. This amounted in 1873 to some 990 lbs.; in 1896 7,532 tons of gold ore, value £320,000, were obtained. This auriferous quartz lies near Biella and along the upper valley of the Dora Baltea. One hundred and twelve thousand ounces troy of silver were likewise obtained as a by-product in working galena.

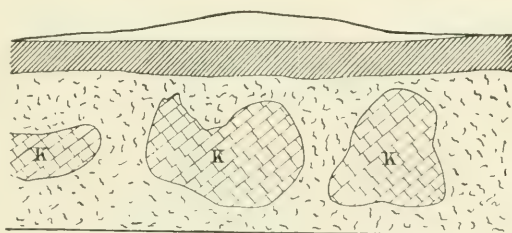
In Liguria and Tuscany pockets and lumps of copper in serpentine and quartz, chiefly in the form of copper pyrites or cupriferous iron pyrites out of which, in the upper layers, the other copper minerals, red copper ore, malachite and blue carbonate of copper are obtained. The view held at present is that this copper pyrites was pressed up with the rock from beneath and separated from it before the hardening of the rock. The yield of this metal for the year 1873 was 600 tons, while in 1896 it was 90,000 tons of ore of the value of £80,000.

Argentiferous galena crops up in the slates and limestones of Sardinia. The beds at Iglesias are rich and are worked in a certain measure by foreign capital. They were known to the Ancients, and were worked in the Middle Ages by the Pisans and Genoese. In 1307 a silver fleet belonging to Pisa was laden with the ore brought up from the mine at Iglesias, and in 1283 the Genoese built their arsenal with the help of silver intercepted on its way to Pisa. Veins of galena are found in the Apuanic Alps and in Tuscany. The cinnabar mine at Serravezza is worthy of notice and so is the mine at Monte Amiata, as quicksilver is not found at very many points on the earth. Nineteen thousand one hundred and forty tons of quicksilver ore, of the value of £442,000, were raised in 1893 from twelve mines employing 413 workmen. In 1873 we learn

from other authorities that fifty-four tons were raised, valued at about £12,000. There are single lodes of copper pyrites and lead ore in the Southern Alps (Trompia and Valtelline), but scarcely one is of any importance. The dolomites of the lower Alps contain zinc ore, partly carbonate of zinc (calamine) or silicious zinc ore, partly sulphide of zinc, called zinc-blende. In the isolated blocks of Rhaetian limestone zinc ore often occurs in similar combinations. This association with limestone strata recalls the district of Upper Silesia, and in each case these minerals seem to have been deposited by streams rising from below and containing zinc, which dissolved the limestone and formed channels or cavities followed by incrustation of the walls with zinc-blende and calamine. Zinc ore is often accompanied by galena, besides which brown iron ore in the form of a ferruginous slime is found in the cavities. These zinc ores lie in the Bergamo Alps at the base of what are called the Esinodolomites, and in consequence numerous shafts, in some cases yielding profitable results, have been sunk at Varenna on Lake Como, at Lenna in the Brembana Valley; at Oltre il Colle, Dossena and Garro, in the Serio Valley, in Val Camonica and Val Trompia. But as there is no coal to smelt the ores the masses are only calcined on the spot, that they may break up

and be of less weight, and the resulting powder is sent abroad. The same holds good of the compounds of copper and lead. The zinc ores go principally by sea to Germany, which stands first in zinc manufacture, the calcined copper and lead to England. These mountain industries were commenced by means of foreign capital, especially English and German, and are carried on by the same. In 1896 there was a yield of 32,000 tons of lead ore, and 116,281 tons of zinc ore, far the greater part of which comes from Sardinia and Northern Italy. The value of the exported zinc ore was £544,000 in 1891 and a similar amount in 1896 for zinc and lead together.

It is an interesting fact that tin ore occurs on Monte Amiata and near Monte Catini in Tuscany. It is found in an eruptive rock, as in Saxony, Cornwall, and Tasmania, partly finely divided and scattered through the rock, partly heaped up in the neighbourhood of clefts in the surface and imbedded in the disintegrated substance. It is believed that these deposits of zinc are of volcanic origin, due to an



IRON DEPOSITS ON ELBA (AFTER LOTTI).

K Limestone imbedded in iron ore, with impure and inferior ore and mould.

issue of tin in the state of vapour which distributed itself among the fissures and rifts.

The lodes of iron ore on the Isle of Elba belong in some degree to similar formations, masses of iron glance and iron pyrites being deposited in cavities and fissures; the chief share in the production has been borne by streams which, according to Lotti, have converted pre-silurian limestone into iron ore, as lumps of the metal are imbedded in it. The most important places are Rio Marina and Calamita. The iron glance is smelted at once, the pyrites is first subjected to calcination, in which the sulphurous acids required in the manufacture of sulphuric acid are given off as gas. The residue in the calcining furnace can then be worked into iron. In both cases we get a grey tough pig-iron. One million six hundred and thirty thousand seven hundred and fifteen tons of ore were raised between 1854 and 1874. In 1873-4 there were only 218,300 tons, of which 125,022 went to France, 42,748 to Italy, and 38,609 to England. The following table gives the returns for the years 1874-1881.

	Tons <sup>1</sup>		Tons
1874-5	191,210	1878-9	170,400
1875-6	194,380	1879-80	269,930
1876-7	193,080	1880-1	396,870
1877-8	152,670	Average	224,080

Since 1881 the produce has been tolerably uniform; in 1896 it amounted to 200,612 tons, of the value of £100,000.



Cliffs of iron ore.    Refuse of iron ore.  
OOLITIC IRON STONE AT CAPE POSO IN ELBA  
(AFTER REYER).

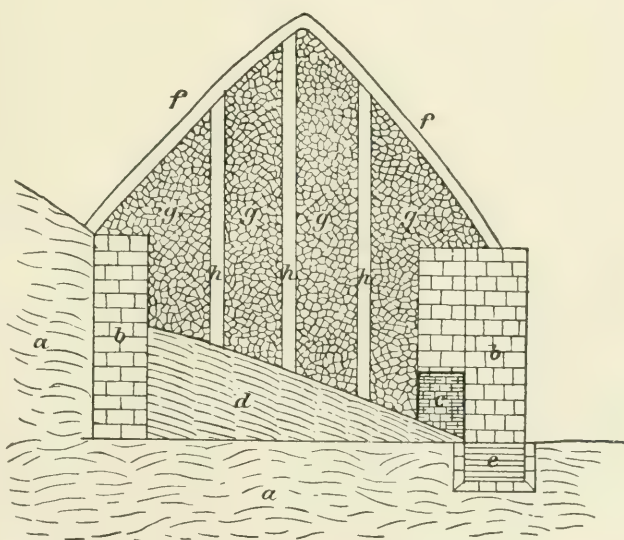
The best mines belong to the State, and an English contractor has agreed to pay £2 13s. per ton for the ore. As the whole of Italy only produced 260,000 tons in 1873, only 40,000 more

than Elba, it is evident that these latter deposits of iron are of great importance to the State. Iron is also found in the Piedmont and Bergamo Alps, in the neighbourhood of Traversella, in the valley of the Upper Trompia near Collio and also in Sardinia. It is true that the pig-iron obtained in these places falls far short of the requirements of the country, and the deficiency has to be made up from abroad, England or Germany. In addition to this, old iron is collected and melted down for use. Large blast furnaces have been established for this.

purpose along the line between Genoa and Novi, especially on the southern slope of the mountains, where water power can be turned to account. The iron industry of the Val Trompia is of old standing and was renowned even in the Middle Ages. The steel and the arms made at Brescia were highly esteemed and are so still. The Italian sword and gun factories are now situated at Brescia and Gardone, higher up the valley, and these also take advantage of the water power supplied by the Alpine streams. The Alpine iron is found in lodes, and is chiefly red iron or spathose iron, more rarely magnetic iron. Many of the ores contain chromium and are worked for the sake of this element, e.g. in the Piedmontese valleys, others, as at Sarabus in Sardinia, contain manganese and pass over into mines of manganese ore, psilomilane and pyrolusite, the products of which are used in the manufacture of manganese steel and of permanganate of potash. The yield of manganese in 1896 amounted to 1,900 tons, valued at £4,000.

With another of its products, sulphur, Italy has long supplied Europe and a considerable portion of the rest of the world. This is united with a later tertiary bituminous gypsum from which it is obtained by transposition, the oxygen of the gypsum ( $\text{CaSO}_4 + 2\text{H}_2\text{O}$ ) producing a slow combustion of the bitumen. We thus get carbonic

acid gas and calcium sulphide, which with the "siggering" water are converted into sulphuretted hydrogen and calcium carbonate. From the former the pure sulphur separates in crystals, veins or runlets, so that a mass of gypsum of this kind may be permeated with sulphur, but generally contains it in a quite irregular manner. The



CALCARONE FOR SMELTING SULPHUR.

- a Slope of the hill.
- b Wall of the cylindrical chamber.
- c Door for letting out the liquid.
- d Sloping floor of the calcarone.
- e Receptacle for the raw sulphur.
- f Roof of earth and clay.
- g Material to be smelted.
- h Air passages for the fire.

sulphur region stretches from the Emilia on the northern slope of the Northern Apennines to the South of Sicily. The places where it is produced are Perticara near Ravenna, the district of San Marino, Macerata, Fossombrone, Altavilla near Beneventum in Southern Italy, in Sicily the environs of Girgenti, Caltanissetta, Raccalmuto and Grotte. In the last place the phenomena of the salse are bound up with these strata of sulphur and gypsum.

Much of the mining is extremely primitive. As the masses of gypsum lie on the surface of the deep valleys shafts and tunnels are driven into it, which is easily accomplished in this soft rock, thus reaching the base of the gypsum, where the sulphur is often most plentiful. Caution is, however, required as this is approached, as with careless mining the water often rushes in in such quantities that without machines for checking the flow the whole tunnel is flooded in a short time. Machinery requires coal, and is therefore used as little as possible; almost everything is done by manual labour, which is to be had cheap in Sicily, much cheaper at any rate than machinery and coal.

The shafts leading downwards with steps are so narrow that only one man at a time can work there, another man carries away the fragments as they are broken off, and also when necessary the water that may have collected at the bottom of the steps. The work below is exhausting, as on the one hand sulphurous gases are liberated from the rock, and on the other heat is quickly generated by the chemical processes going on, so that the people work almost naked. Besides this the operations are carried out chiefly in summer, when the heat outside is also insupportable.

The raw material, when obtained, is piled up within circular walled enclosures (*calcaroni*) in loose white cones 16 feet in height, which are kindled by means of faggots introduced underneath. Thus the burning sulphur develops such heat as to melt what is left in the blocks of raw material, and this collects at the bottom of the *calcaroni*. The cone acquires a splendid yellow colour by sublimation of the flowers of sulphur. One fifth of the sulphur is lost by combustion, so that even rich pockets and lumps of the raw material seldom yield more than 25 per cent., and as a rule only 15 to 20 per cent. of raw sulphur. The combustion develops sulphurous acid, which is destructive of all organic life and would annihilate all the vegetation in the locality in a short time. On this account it is not permitted to smelt sulphur in the winter and spring months, in order not to injure the fields, and summer is consequently the particular period for production, after the crops have been carried and the other vegetation, with the exception of the trees, is already parched by the sun.

In wine producing districts no sulphur can be worked, as otherwise the grapes would be irretrievably ruined. The raw sulphur is run either at once, or after a second smelting, into wooden moulds holding about a hundredweight, and there it crystallizes into yellow prisms. In this form it is ready for trade; it is first stored at Catania, Girgenti or Licata, and then most of it is sent abroad. Sicily, according to one computation, has beneath its surface some 65,000,000 tons, of which about 15,000,000 have already been dug. If the consumption continues to increase as it has done hitherto the remaining 50,000,000 will be exhausted in the course of a century or a century and a half.

The profit from this source had already reached a respectable amount in the eighteenth century, and the Bourbons imposed an export duty for the benefit of the Treasury. Foreign countries could not do without Sicilian sulphur for the manufacture of gunpowder and oil of vitriol. The English occupation of Sicily in the Napoleonic wars made Europe dependent on Great Britain, and led to the exploitation of sulphur mines in Northern Italy and Spain. At present ordinary powder has been replaced by smokeless powder which, though sulphuric acid is employed in its preparation, does not itself contain sulphur. At the same time sulphuric acid is obtained by heat from the different kinds of pyrites that contain sulphur (iron pyrites, arsenical pyrites and copper pyrites) and it is thus possible that Sicilian sulphur may be dispensed with. This brought about a bad crisis in Sicily in 1892. Most of the mines had to stop work, the workmen were without bread in the summer months, when agriculture is at a standstill, and they conspired in secret societies (*fasci*), nearly bringing about a revolution. This fall of prices was preceded by an extraordinary rise in consequence of the increased demand for sulphuric acid connected with the introduction of smokeless powder, so that a wild speculation in sulphur mines followed, leading only too quickly to disaster and ruining many of the well-to-do classes with its bubble companies and its bankruptcies. The price of the hundredweight before was from 8s. to 10s., in 1894 it was only 3s. 6d., and in 1896 from 4s. 6d. to 5s. It is not easy to see beforehand how the position is soon to be improved considering the diminished demand and the large stock in the magazines. For the population of Sicily, however, it is a question of life and death, and the Government is therefore endeavouring by every means in its power, national credit, duties and prohibitions, to remedy the difficulty. The following table gives a survey of the export :—

	Tons		Tons
1882	283,590	1887	307,447
1883	328,016	1888	344,400
1884	311,168	1889	356,515
1885	309,143	1891	387,232
1886	324,658	1895	500,000

In 1873 the value of the 250,000 tons exported was £1,360,000, the 400,000 in 1891 was over £1,760,000. In 1896, in spite of the increase of production the exports were only valued at £1,184,000.

In 1894 the exportation was distributed as follows :

	Tons		Tons
North America . . . .	108,306	Portugal . . . . .	8,870
France . . . . .	58,605	Norway and Sweden . . . .	6,337
Italy . . . . .	56,478	Belgium . . . . .	5,404
England and Malta . . . .	23,650	Spain . . . . .	4,847
Russia . . . . .	19,312	Turkey . . . . .	3,368
Germany . . . . .	16,762	Australia . . . . .	2,536
Greece . . . . .	13,467	Elsewhere . . . . .	2,000

Nine tenths of the mineral is obtained from Sicily, nearly one tenth from Romagna, and only one fortieth from the province of Naples.

This Italian sulphur is free from arsenic, and can therefore be used in chemical preparations, in pharmacy and in the manufacture of india-rubber in the state in which it arrives.

It is also used in conjunction with sulphate of copper for the destruction of the fungi (*Oidium* and *Peronospora*) which have been so destructive to the vine ; and this explains the great sale of this article in Spain and the Balkan peninsula. Sulphur occurs in small quantities in the volcanoes at the Tolfa, in the Solfatara and in the Lipari Isles. The result of the sublimation was of importance in the beginning of the nineteenth century, but it plays no part at present ; the sulphur slime raised by convicts from the depth of the crater of Lipari which is mixed with disintegrated tufa, is used instead of flowers of sulphur to sprinkle on the vines in the mountains on account of its cheapness, and has the same effect.

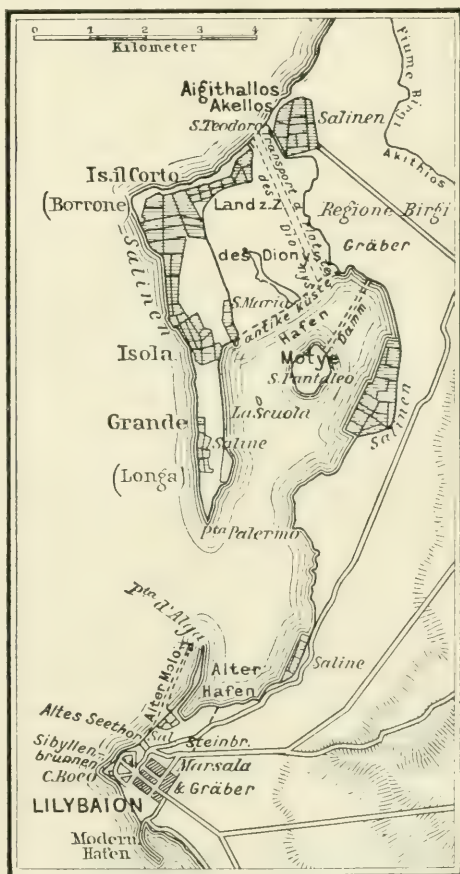
Celestine, or sulphate of strontium, is associated with sulphur in Sicily and the Emilia. Its utility is small, its chief use being in the manufacture of fireworks, in which the red Bengal flames are produced by strontium, and recently in the manufacture of beet sugar. Alum and alum stone (alunite) are found with sulphur in the volcanoes ; these were profitable in earlier times before alum was made in large quantities artificially. The tufa of the Tolfa, the solfatara at Pozzuoli and the Lipari Isles which are permeated with sulphur salts, used to be steeped in water to wash out the alkali contained. At present this would be too expensive a proceeding and the production of alum has come to an end, or nearly so, as even in Sweden and Central Germany the old alum slate mines have been abandoned.

The manufacture of boracic acid from the hot springs of Sasso in Tuscany and the Crater in Lipari still continues. Boracic acid (Sassoline  $B[OH_3]$ ) forces its way up from the ground accompanied by hot

water or steam, and on cooling it is deposited in glittering white scales. At Sasso the hot jets of steam when it is poor in boracic acid are conducted immediately below the richer alkaline solutions and thus fuel is saved. At other places, too, as at Massa Maritima, when waters which are rich in boracic acid are observed, they are worked, and thus 4,000 tons of this chemical are obtained yearly. (In 1896, 2,600 tons were valued at £320,000.)

Masses of gypsum are numerous. They are found in Northern Italy, in the Bergamo Alps, e.g. at Loveri, on Lake Iseo, at Tortona and Voghera in Piedmont. At Volterra, in Tuscany, is obtained the translucent variety of gypsum called Florentine alabaster, used in making objects of art. The gypsum like that of the Eastern Apennines and Sicily is cut in open workings or quarries, and then burned to form the gypsum of commerce. The stucco and gypsum industry is in a flourishing condition, which may be partly ascribed to the good material.

Salt is the last mineral to be spoken of. There are no large beds of salt. Small pockets of salt are imbedded in the tertiary strata of Calabria, the Apennines and Sicily. The water of many mountain streams is slightly saline. The poverty of the soil in this respect is, however, of less importance as the sea is rich in salt, and owing to the southern situation of Italy the sun evaporates the sea water easily, separating common salt. *Saline* or salt pans are at work on the Adriatic Sea along the coast of the Emilia north of Gargano, then in the East of Sicily, at Augusta, at Trapani and Marsala at the western point of the island as well as at Carloforte and Cagliari in Sardinia. The sea water is evaporated in shallow pans, separated



SALTPANS OF SAN PANTALEO, NEAR MARSALA (LILYBÆUM) IN WESTERN SICILY.

by dams, and narrow enough for a man to step across, which can be opened or shut towards the sea. A mass of gypsum and salt is deposited which is shovelled out and put in heaps. As there is absolutely no rain in Sicily during the summer these cones of salt can stand in the open air till they are taken away. Summer is of course the best time of year; the evaporation is less in winter, the rain soaks the brine again, and the sea occasionally breaks in the salt pans during stormy weather.

The crude salt is grey or reddish, from the admixture of slime containing gypsum, clay or iron. It can be applied to many uses in this form, but for table salt it requires rectification, all the more because bitter compounds, chloride of lime and chloride of magnesium, are enclosed in it in small quantities, and their affinity for water makes the crude salt always damp. The crude salt, which is crystallized and coarse grained, has first to be ground, and this is done at Trapani by means of windmills. In France the lye which remains has been worked with great advantage for potash, iodine and bromine, but this does not seem yet to be done in Italy. The lye flows back into the sea, and the whole of the arrangements are primitive and much in need of improvement. In the seventies over 330,000 tons of salt were obtained in this way from the sea, part of which was, under a system of drawback, exported to the Balkan peninsula, especially from Sicily (Augusta). Northern Italy is supplied from the lagoons of Comacchio, Southern Italy from Barletta, while the salt pans of Western Sicily and Sardinia send a good deal abroad for the manufacture of soda, as do also the salt pans of Orbetello. Many districts of Sicily supply themselves with rock salt, as the inhabitants have the privilege of taking what they need from the surface blocks, which are the property of the Commune. In 1896 only 17,100 tons of rock salt were obtained, 12,000 tons of river salt, while the salt pans supplied 380,000 tons.

#### MINERAL STATISTICS FOR ITALY, 1895

Ore and Raw Material	Produce in Tons	Value
Iron . . . . .	200,750	£101,595
Manganese . . . . .	1,950	4,090
Iron and manganese ore . . . . .	10,000	4,000
Copper . . . . .	90,046	84,944
Lead . . . . .	33,056	178,573
Lead and zinc mixed . . . . .	160	528
Silver . . . . .	630	21,446
Gold . . . . .	7,537	34,120
Antimony . . . . .	5,025	12,118
Quicksilver . . . . .	14,076	29,514
Sulphur and copper pyrites . . . . .	44,996	21,765
Coal . . . . .	271,778	79,274

MINERAL STATISTICS (*continued*)

Ore and Raw Material	Produce in Tons	Value
Sulphur . . . . .	2,694,249	£955,956
Rock salt . . . . .	17,023	10,405
River salt . . . . .	11,659	12,260
Petroleum . . . . .	2,484	25,779
Asphalte and bitumen . . . . .	44,729	35,547
Boracic acid . . . . .	2,574	33,485
Graphite . . . . .	3,098	2,038

Many native rocks are worked. Brackets and small articles of luxury are made of serpentine, and offered for sale in Florence and Rome. Grindstones are made at Brescia of silicious schist of the Val Trompia. The marble quarries of Carrara and Serravezza, some eighty square miles in extent, are well known. In these, a white fine grained stone is cut from the quarries, some 600 in number, carried down to the sea shore on a special railway, and then forwarded by ship or railway.

These marble works, the most important in the world, employ 10,000 workmen who formed a dangerous element during the troubles of 1895, in the Lunigiana, so that it was necessary to use severe measures against them. The best marble is pure white, the inferior kinds are yellowish or grey, and not uniform in grain. The fine grained uniform drip-white stone supplies the material for statuary (*marmo statuario*) and is in large blocks difficult to obtain and to transport. Small slabs and lumps are not dear, and cargoes of them are brought to Germany, where they were in fashion for some time for use in churchyards. Now, however, Swedish stone, which withstands frost better, has replaced this marble. The export of marble and alabaster has risen from 75,000 or 100,000 tons in the seventies to 125,000 or 130,000 in recent years; of these, 60,000 tons were of worked marble, and 70,000 tons were in the rough state. The value at the present time may be placed at from £800,000 to £1,000,000.

Many of the limestones found in the Apennines are suitable for common tables and wash stands, such as are used in the country. In the ruins of Pompeii, many kinds of marble can be recognized which came in all probability from the neighbouring range of Sorrentum. There is a schistose greenish Cipoline at Cagliano, in Piedmont, a highly prized breccia like limestone is found at Stazzema, not far from Carrara, and contains round fragments of marble in its bluish green mass. This is the Brecciato or *mischio di Serravezza*. At Beneventum in Southern Italy, not far from Vitulano, red and grey limestones, rich in shells (*lumachella*) are quarried and worked into various objects, as they take a good polish. The same holds of a yellow limestone at Siena (*giallo di Siena*).

Among stones for building purposes, the most important is the calcareous tufa or travertine, consisting of loose limestone masses even now being deposited by waters containing carbonic acid and lime. When newly quarried it is easy to work, but as it dries it becomes tolerably hard, and it can be obtained in any required quantity in large quadrangular blocks. The Romans knew this stone, and made great use of it, the Colosseum, the Pantheon, the aqueducts of the Campagna, and the older houses in Pompeii being built of it. Extensive deposits are to be found everywhere at the foot of the Apennines, where subterranean springs occur or where the waters from the limestone heights flowing slowly into the valleys are, or have been, dammed up. The largest deposit is that reaching from Tivoli to Rome (*lapis tiburtinus*) and travertine is also quarried at Anagni in the Sacco valley, at Ferentino and at Nocera and Sarno, near the foot of Vesuvius, and at many other places. The temples and fortifications of the old Greek city of Pæstum were built of the travertine of the plain around, and one is astonished at the vast dimensions of the blocks used for the architraves and capitals, and at the possibility of bringing these huge weights into their proper positions with the machinery of the time. The similarly gigantic structures in Sicily at Girgenti, and at the temples of Selinus are made of a loose marine limestone which resembles travertine in being easy to quarry and to work. It was in limestone of this kind that the celebrated quarries of Syracuse were cut, the high perpendicular walls of which caused them to be used in ancient times as state prisons, as in the case of the Athenians after the unfortunate Sicilian expedition; these are now splendid orange gardens and form a pleasing contrast to the desolate region around.

Granite is chiefly obtained from the quarries of Baveno, on Lake Maggiore. It is a light coloured rock splitting into thin flat slabs which are used for pavements, flights of steps, window sills, etc. It is found somewhat widely in Northern Italy, in Ticino along the St. Gothard Railway, and is occasionally exported into Northern Switzerland or Southern Germany. This Baveno granite resembles in its appearance and usefulness the granite of Striegau, in Silesia, which is so much used in North Germany.

The lavas of the Alban Mountains, Vesuvius and Etna are used as paving stones in Rome, Naples, Messina, and Catania. Stones are also obtained for Naples in extensive quarries, at Torre Annunziata, where the lava streams of 1760 fell into the sea. These stones have some advantages, such as cheapness, but also some drawbacks, as they quickly get so slippery as to be dangerous to men and beasts, and have to be carefully roughened with a chisel. Flights of steps of this material soon get worn, and are very unpleasant to walk upon. The pavement

of the Via Appia and the streets of Pompeii and Syracuse show that the same stones were used in ancient times for the like purposes, and had the same disadvantages, and even in those times the worn-out flags were simply raised and turned over, as is commonly done at present. In North Italy and Tuscany this paving material is often not to be had in the neighbourhood, so that shingle from the rivers is used instead. The pathways made of this, however, are abominable, making walking a regular martyrdom, as anyone can testify who has been to Milan, as only certain parts of the sole of the foot touch the ground below. In ancient times, millstones and millstands were made of the blistered and rough lava, and some have been dug up at Pompeii in their old positions in the bakehouses. The town is said, indeed, to have carried on a trade in millstones, for which Vesuvius furnished the material. The old quarries were of course destroyed with Pompeii, and we do not know where this was excavated.

Among volcanic rocks we must here mention pozzolana and pumice stone. The light coloured greyish white pumice of Lipari is collected from the tufa of the crater walls, and is exported in shiploads. It is used in many chemical processes, and forms in a state of powder a constituent part of many toilet powders and pomades, and unfortunately also of tooth powder, for this hard, sharp rock injures the enamel. Pozzolana, the fine volcanic tufa of the Phlegræan Fields, gives, when joined with lime, a mortar of the best kind for all buildings constructed under water. We are indebted to it, as we mentioned before, for the preservation of so many of the ancient buildings of Southern Italy. Mortar made with pozzolana is often harder than the stones it unites, so that sometimes it is seen to project in honeycomb fashion. This tufa is obtained in a very simple manner. A slope, as at Baïæ, is cut into terraces from above downwards. The substance dug out is allowed to slide down to the sea shore; there it is sifted to get rid of the bigger pieces, and the fine dust is straightway placed on shipboard. It is sent to Italian ports, to England, France, and America.

We have finally to speak of clay, of which there is a superfluity in some provinces. The pliocene clay, sandy and without much lime, is an excellent material for tiles and pottery, and is burnt in the greatest quantity at Monte Mario, near Rome. Strata which are still worked gave the material for the numberless antique vases and pots with which the museums of Italy are crammed, and which bring home to us the high development of the potter's and glazier's art in those days. The gigantic pitchers such as are occasionally found for holding grain or oil could only be prepared and burned at present at a great expense, so that they have been supplanted by

wooden casks, which are cheaper and more convenient, being not so easily broken. One kind of clay, the bolus of Monte Amiata, serves the purpose of fuller's earth; another, which contains iron, the terra di Siena, forms a brown colouring material. The volcanic tufa can also be made into bricks and burned, and some of the ancient brick buildings were constructed of this material, certainly a cheap one.

We have finally to treat of the mineral springs, as being one of the products of the soil which have proved useful to man. Italy is extraordinarily rich in medical springs, cold and hot. One statement gives the number as nearly a thousand, but of these, it is true, only about a third are in actual use. A great number of these are connected with volcanic districts, and are to be regarded as incidental results of the volcanic force. Many are hotter than the mean temperature of the locality, and are thus genuine hot springs; some contain salts of sulphur and nauseous gases, others have chlorine or muriatic acid, and a third group, holding carbonic acid, may be classed as chalybeate springs.

The sulphur springs in the widest sense serve as a cure for diseases of the skin, like the waters of Aachen and Spa. The waters of Lucca are celebrated in this respect; they rise in rifts of the dolomite, and come to the surface in the neighbouring springs of Bagni di Lucca and Bagni di San Giuliano, which have a temperature ranging from  $72^{\circ}$  to  $108^{\circ}$  F. Twelve different springs are distinguished, of which the Sorgente del Soccorso is the hottest. Many of these were utilized in the Middle Ages, but it is doubtful whether the Romans knew of them. On the other hand, the waters of Pozzuoli and Baia were far more extensively visited in ancient times than at present. There are many warm springs rich in sulphur salts and sulphuretted hydrogen to be found on the slopes of the Solfatara towards the sea, the Colli Leucogei as they are called, and at Lake Agnano, which are made use of by the Neapolitans, and are easily reached by two small railways. There are also baths for the poor, among which those at the Colli Leucogei are of most primitive construction, utterly neglectful of the laws of hygiene.

The hot springs of Tripergole, used in ancient times, have lain buried beneath the Monte Nuovo since 1538. On the other side of the Lucrine Lake there remain only vapour baths, the Stufe di Nerone, which are visited more from curiosity than for healing purposes. On the other hand, the warm springs of Casamicciola and Lacco Ameno, on the Island of Ischia, are still of importance. These rise from the flanks of the half extinct volcano of Monte Epomeo, at a place which has been indicated as the site of a future eruption, on account

of these hot springs and the numerous and violent earthquakes. The thermal water has a temperature of  $183^{\circ}$  F. ; it is saline, and to some extent sulphurous. It used to be visited annually by thousands, but these numbers have been greatly diminished since the terrible destruction caused by the earthquake of 1883, so that at present the water is carried to Naples in ships, to be made use of there. The chief sources are the Sorgenti of Gurgitello and Bagni Manzi, l'Acqua del Tamburo at Casamicciola, and the Sorgenti di Santa Restituta at Lacco, which last have hot water that is essentially sea water, and at the coast hot springs rise in the sea itself. The thermæ in Naples are unimportant, although they are extensively advertised.

The sulphur springs of Telese, in the valley of the Volturno and the Colore west of Beneventum, are independent of volcanic antecedents. Their origin must apparently be traced to the transformation of subterranean masses of gypsum, as in the case of the sulphurous waters of the Marches and the South of Sicily. Such quantities of sulphuretted hydrogen are given off at Telese that the whole neighbourhood reeks with it, and the same holds of the road from Rome to Tivoli, near the Acque Albule, popularly called Acqua Zolfà di Tivoli. Remains of ancient baths show that both of these were much resorted to. They issue from the ground as considerable streams, and are said to yield daily 10,000,000 cubic feet, containing some 700 tons of mineral matter in solution. Smaller springs of the same character are found in the district between the Ciminian Hills and the Volsinian Lake, in the lower valley of the Tiber, etc., of which the Steps of Cajola, near Viterbo, may serve as an example. It is not quite clear in this case and in that of Acque Albule how far they have been influenced by the volcanic nature of the surrounding country. The same holds of the sulphur springs which rise out of the ground at Termini Imerese on the north coast of Sicily, and are apparently connected with a geological fault.

The warm curative springs on the pass over the Apennines at Porretta contain a mixture of sulphuretted hydrogen and marsh gas, and in this case it is clear that they both come only from the early tertiary or cretaceous strata. The high position of the town and its connexion by railway with both sides of the Apennines recommend it as a summer resort, and it is often crowded with foreigners in July and August.

Italy has many thousands of chalybeate springs; only a few are well known, among which the waters which flow in old workings at Recoaro, in the Alps, may be mentioned. As these springs contain iron, they are visited by anæmic and chlorotic patients with good results, to which residence in the fresh air of the Alps and the

exercise of mountaineering doubtless contribute. Latterly the slightly carbonated and ferruginous waters from Nocera and the Irno valley, near Salerno, have been much drunk in Southern Italy. They somewhat resemble Sulzmat or Apollinaris water. Besides these there are chalybeate springs at Torre Annunziata at the foot of Vesuvius, at Paterno and Zaffarana near Etna, and it was even observed during the eruption of Vesuvius in 1861 that all streams in Torre del Greco became chalybeate for a time. The thermæ of Acicatena and Acireale also contain salts and some sulphur. The warm springs of the Euganean hills, which have been used since ancient times, contain muriatic acid, and some of them iodine as well. The chief of these rise at Teolo, Ballaglia and Andona, and are the remains of the former volcanic action of this district. They are highly esteemed on account of their iodine, and are compared in their effects to Kreuznach or Pyrmont. A special mode of using these waters takes the form of mud baths, and this has recently been introduced into Germany as well, the mud being conveyed over the Alps in waggons. It is not very clear, indeed, what result this dry mud can have, considering that it consists of clay, the remains of disintegrated rocks, which do not affect the skin.

Lastly, there are, in the Adda valley, near Bormio or Worms, warm but indifferent springs resembling those of Badenweiler or Baden Baden. These gush out of the dolomites bounding the valley in plentiful streams, at a temperature of 86° to 95° F., collecting in the bed of the Adda, and have given rise to the construction of extensive baths, the healing properties of which are said to be considerable in cases of rheumatism and similar ailments. Unfortunately, the best of the springs seem to have suddenly failed in 1893, and it has not been possible to recover them by going deeper. There were seven streams in use; of these the Sorgenti dell' Archiduchessa gave over 100,000 gallons a day, the Acqua di San Martino giving 60,000 and the Zampillo dei Bambini 30,000, enough altogether for 100 baths per hour, so that these thermæ seem to have exceeded all others in the supply of water with the exception of the Acque Albule.

## 2. FORESTRY, AGRICULTURE AND HORTICULTURE

Italy is poor in woods, if we understand the word in its usual sense of collective plantations of trees. In addition, however, to these, which are certainly limited, there is a considerable extent of under-wood, so that 22 per cent. of the total area is forest land. In France this is reckoned at only 17 per cent., in Prussia at 23 per cent., in Austria Hungary 31·6, in Sweden and in Russia 39, and in Great

Britain 2·4 per cent. Of this 22 per cent. the chief part is in the mountains. The southern slopes of the Alps, the tops of the Apennines, the mountains of Sicily and Calabria, and a wood of this kind in Italy, with a few scattered trees standing far apart, and a quantity of gnarled or thorny bushes is quite different in appearance from a German forest. This underwood is called *macchia* ; it is often impenetrable, and is the appropriate home of the wild boar and the wolf, resembling in this the thickets of the plateau of Lorraine.

The clearing of the forests dates from ancient times, when as much land as possible was devoted to the cultivation of corn, and, where that was not feasible, to meadow land. The highest parts of the Apennines have indeed kept their forests, though they have been somewhat thinned ; but in the lower parts of the country the raising of goats in the meadows, together with the necessity of having wood for building purposes and fuel, have caused the older trees to be cut down, and prevented new forests from being formed. Clearing constantly goes on ; Etna is gradually being stripped of its garment of wood on the east and north, and Mount Sila is being deprived of its treasures without the probability of the adoption of a rational system of forestry.

Despite the want of collective woodlands, it cannot be said that Italy is poor in trees. On the contrary, except the Tavoliere di Puglia, there is no large stretch of land quite without trees, like the country round Mansfeld. Everywhere the meadows and cornfields are separated by stone pines, chestnuts, mulberries, and olives, poplars, etc., so that even in the plains of Campania and Lombardy it is impossible to get a wide view owing to the tree trunks, which stand close together and one behind another. Umbria displays this feature of the landscape in a specially beautiful form ; it is the delight of all Italians, who cannot sufficiently praise their "*Umbria verde*." These solitary trees, however, have quite a different aspect from those in Germany, for while it is there usual to see a broad crown above a massive trunk with mighty branches, all the trees in Italy are forced upwards, and the crown is kept as small as possible, in order not to take too much light from the fields, and the lower branches are invariably lopped. Old oaks, elms or chestnuts occasionally present a very picturesque appearance, owing to the irregular growth of branches and foliage.

The goat is the most destructive enemy to the forest proper. It is the most valuable possession of many of the small farmers in the mountains ; it is indispensable to them, as it furnishes hair, milk, meat and leather, and is easy to feed. There are some two millions of goats, and nine-tenths of them are pastured almost at large on

the Apennines or other mountains. The goat eats off the young shoots and twigs, and can reach the brushwood to the height of five feet. Thus the top shoots of the trees are always taken off, and if they survive they extend by lateral shoots and form dense bushes, from the midst of which, if the animals can no longer get at the shoots owing to the breadth of the bushes, several small stems rise at last, and if they escape the axe grow up into a group of trees. The thorns (buckthorn, blackthorn, etc.), which are distasteful to goats, flourish all the more plentifully for the free space they have to grow in, and shelter other young foliage trees under their branches. Enclosures are extremely rare, as the privilege of pasture would be lost, and in many communal woods this would mean a diminution of the communal income, which would be favoured by nobody. Forest laws have indeed been passed, as the law of 1874, which forbids the turning into pasture of waste lands belonging to the communes, which are to be afforested; but this law has remained a dead letter, no one having taken any serious trouble in the matter, or indeed paid any attention to it. The Apennines have many wide areas, at present almost worthless, where excellent woods might grow if only there were the means of afforesting them. This would, at the same time, check the floods which now devastate fertile valleys and cover them with *débris*, and would gradually produce woodlands, which would mean a valuable capital, and would obviate the necessity of importing wood from Scandinavia. That it is possible for trees to grow on these mountains is shown by those forests which do exist, some of which may be described as magnificent.

True forests are to be found on Monte Silo, in Calabria, on the slope of the Nebrodes, in Sardinia, in the Salernian Apennines on both sides of the Upper Sele, in the crater and on the western flank of Monte Vulture, at Rieti in the Central Apennines; and at Vallombrosa, in Tuscany. These are partly oak and beech, partly fir and pine; they lie away from high roads, in places difficult of access, and owe their preservation to the absence of means of transport. Even to-day unsawn trunks of trees cannot be brought from the pathless plateaux of the Salernian Apennines, and it is useless to think of floatation in the case of mountains which absorb all the rain that falls on them. The cost of carriage would be so great that native wood could not possibly compete with that imported by sea.

Setting aside these mountain woodlands, there are in the plain forests of conifers, as a rule composed of Scotch firs, especially along the coasts. The most important have been already mentioned—the pine forest near Ravenna, the *Macchia* on the dunes of Pisa, the *Pineto* of the Pontine Marshes. In these fever-haunted stretches

of coast people have been forced to plant woods, and have met with some success.

From 1867 to 1894, 38,700 acres were afforested at a cost of £140,000, of which £60,000 was borne by the State, £60,000 by institutions and local bodies, and the remainder by private individuals.

Preliminary attempts with the same end in view have been made in Calabria, the Belluno district, Bologna, Salerno and Grosseto, the design being to afford protection from landslips by planting the upper valleys.

From the Alps to Sicily the bulk of Italian forest consists of brushwood, and it has been asserted with truth that the majority of Italians have never seen a real forest. This brushwood form of the trees is connected first of all with the species of the trees (hazel, chestnut, etc.), secondly, it is a consequence of the frequent lopping and of the aftergrowth from roots that have not been dug up ; and thirdly, it is convenient for the manufacture of charcoal.

As Italy has such a favourable climate and the winter is not accompanied by a spell of snow and ice, the chief use for wood, omitting, of course, its use in building and carpentry, is for kitchen fuel, not for heating the rooms, which generally have neither stove nor chimney. The great majority of the houses are not built for artificial heating, and are without appliances for burning coal or coke ; they have no regular fireplaces, so that it is not even possible to burn wood anywhere. The whole of the fuel consists of charcoal from the mountains, which is burned in kilns on the spot where it is cut, and is brought down on mules into the valley. Without much injuring its value as fuel it is rendered considerably lighter by evaporation of the water, and thus the transport is facilitated. The charcoal requires blowing to get it to burn, so that every household has one or more fans prepared of maize or palm leaves, which they manage so skilfully as to keep the charcoal glowing without sprinkling the ashes over the food or in the room.

The charcoal burners, who form a group or special company of their own, buy by auction from the communes or private owners the right to lop all the trees in a certain district or a number of trees previously specified.

In brushwood districts the declivity of the mountain is generally completely cleared, and in Southern Italy this is mostly done in spring. In the great forests the proprietor who manages his estate rationally only sells single trunks, thus giving opportunity to the young wood to produce an aftergrowth and to develop more freely. The clearings give a splendid show of flowers in the following spring, which apparently come from seeds which have lain long in the earth without the light and air necessary for germination. When the wood is lopped off it is

stripped of its rind with a knife or an axe, a process which goes on quickly and smoothly in springtime in the brushwood. Then the charcoal kilns are built up of pieces a foot long, covered over with earth and set on fire—twenty or thirty of these may at times be counted on one hillside—and taken out when the combustion is completed. Then they are conveyed to the lower country in sacks or in two large baskets hung on the mules. This is often a wearisome business, taking up a great deal of time, and women and children are employed on it. A boy or a girl will lead three or four beasts tied together in single file or will get dragged down the mountain by one of them in spite of its heavy burden, in which case it can be imagined that the beast can only be urged on by constant cries.

The waste loppings are sold by the charcoal burners to the inhabitants of the neighbouring villages.

Old women or men unfit for labour, poor people in short, having bought their bundles by auction, drag them down for miles either to use them as firewood themselves or to sell them at a profit which is miserable compared with the labour and time expended. The daily earnings of a woman who fetches wood may be put at threepence or fourpence. This brushwood, together with maize stems and vine refuse, is exclusively used in the villages for cooking purposes. It is burned in wide chimneys under copper kettles and if there is any left it is put into shallow pans called “braciére,” which besides being used for frying serve to heat the rooms in winter and to restore a little warmth to the numbed feet and hands.

When the charcoal burners have done with one district they proceed to another. They have no fixed abode but dwell out in the forest, sleeping in rude huts or in caravans.

They are held to be dangerous people and they conceal in their midst a good many brigands. They are acquainted with all the hiding places and byways, so that well-to-do farmers and landowners are glad to get out of their way, and when they have to visit them they do so armed. The population of the Sila and of the district between Eboli and Montella, consisting chiefly of charcoal burners, have an especially bad reputation as *mala gente*.

In the Southern Alps, where there are more manufactures and wages are higher, wire ropes are used for conveying the bundles of brushwood, and often even the wood to be made into charcoal. This wire rope is fastened to a projection and then stretched either to the other side of the valley or to the bottom, and if this last is not easily reached the rope goes alternately from one flank of the valley to the other, with a man at the place of re-loading. The bundles are received by this man as they slide along the rope, at short intervals, and placed

by him on the second rope, where they set forth on their journey across the valley and are then stacked at the terminus.

Great heaps of brushwood may be seen in the sulphur districts of Sicily, as wood is required for kindling the calcaroni. Charcoal is shipped from the Sila forest and Sardinia to Central and Southern Italy, packed as a rule in baskets of bark or millboard. Besides the genuine charcoal an artificial product of charcoal dust, soot, lignite, etc., called *carbone francese* has recently been much used. It keeps alight longer, and thus is useful for keeping up the fire on the hearth and is cheaper than charcoal, as you get six pounds instead of four for a penny. These cylinders of charcoal are somewhat like bricks, only that they give a smokeless flame.

Italy has 20,000 square miles of forest land, 916 of which belong to the State, 8,585 to the communes, and 10,486 to private owners. Among the last, in addition to the great landowners, there are charitable institutions, monasteries and the like.

It follows from these figures that the State can do but little directly for the advancement of forestry. A school of forestry (*Reat Istituto Forestale*) has indeed been founded in the beautiful woods of Vallombrosa on the slope of the Pratomagno range in Tuscany, but this remains the only one of its kind. In the communes, which are generally laden with debt and possess a government constantly changing and little to be depended upon, the carrying through of radical reform is scarcely to be thought of, for the rent paid for the right of cutting wood for pasture, etc., yields an indispensable income to the communal fund which would otherwise have to be raised by taxation. Often the members of the commune have the right of cutting wood from the *macchia* belonging to it, and the prohibition of this practice, so pernicious to the forest, would lead to troubles of a dangerous character, as we can see from what happened at Montescaglioso in the January of 1898. Things are no better in the case of the private owner, as charitable institutions and religious houses are dependent upon the income and have seldom enough reflection and true insight to carry through improvements at the cost of a momentary sacrifice, and lastly the great landowner does not live in the country, having only tenants and agents there who want to get as much as possible out of the ground and do not bestow the necessary care on the trees or allow them to reach their full height. Forestry is a very sore point in the national economy of Italy, but it can only be healed, in accordance with what we have said, with a great sacrifice of money and time.

The produce of firewood is estimated at 222·6 millions of cubic feet, of building wood 47·8 millions, and of charcoal 106 millions, the last being valued at £720,000.

The import of wood was £1,200,000 in 1891, in opposition to which there was an export of £520,000 worth of wooden articles of manufacture, especially casks and objects of olive wood, and in these last the value was essentially increased by the labour bestowed on them.

Agriculture is carried on in Italy in three different ways, according to the tenure of the land, the nature of the soil and its extent. In some districts the land belongs to a few large landowners, as in the Campagna, Apulia, the district of Metaponto, and the centre of Sicily, and in this case grain is cultivated on a large scale. The cornfields scarcely receive the supply of the material for recuperation that they require, especially artificial manure, consisting of superphosphates and cenite; they are but little irrigated, and from harvest till the spring ploughing they lie dry and without vegetation. The labourers fluctuate, coming at the seasons of ploughing and harvest, like the gangs of Poles in Germany, and living elsewhere at other times. In the opposite system of division, under which the land is broken up into numerous small holdings or allotments, the cultivation is essentially horticultural, the utmost is got out of the ground and naturally there is in such regions a dense population. The environs of Naples, the foot of Vesuvius and Etna, and the Conca d'Oro around Palermo are examples of this. The main conditions for culture of this kind are a fruitful soil, plentiful and often artificial irrigation of the allotments, and the possibility of repeated manuring, which can only be brought about in the vicinity of large towns.

The third kind is the terrace cultivation in the mountains. The allotments are not so small as in the case of garden culture and are not continually under cultivation. Manuring takes place once in the spring and ploughing once or twice, according to the character and position of the ground, after which the soil is allowed to lie fallow. The conditions of ownership are very different, as side by side with freehold tenure there are holdings belonging to the commune, the church, and private persons. This kind of cultivation takes its name from the stone walls, built of shingle and often with great labour, which break up the tract into a number of terraces like a flight of stairs. Most of these allotments are only accessible by bridle tracks or cross roads, so that manure, seed, and crops have to be carried up or down on the backs of asses, mules or men. Vines, olives, maize, oats, rye, flax and hemp are raised in this way and give good crops under the vigorous utilisation of the soil. When the Apennines are more level in form the terrace walls are wider apart and lower, as in the Ofanto valley, where the slope is so gradual that the wall is only required as a protection against violent rain and its after effects. Here again it is chiefly corn that is sown, and the fields are ploughed only once a year.

It is further to be remarked that the cultivators seldom live on the ground they cultivate. In the mountains the population are impelled to dwell in the high lying villages and hamlets by custom, by insecurity, and by the danger of fever. In the fertile districts of Campania and Sicily the sale of garden produce requires them to live in the neighbourhood or in the suburbs of the towns, yet even there small white dwelling houses are scattered here and there among the plantations. We must not expect, however, to find a settlement corresponding to that of the peasants of Westphalia or to the distribution of the population in Scandinavia. In the corn or cattle producing districts belong-



SHORT-HORNED CATTLE PLOUGHING.

The horns are fastened to the long beam of the plough. The animals wear basket-work muzzles to keep off flies and prevent them from grazing.

ing to large landowners the farm houses (*masserie*) lie in the middle of the areas belonging to them, but these are of course not numerous. This difference between the place of abode and the place of labour enhances the difficulty of agriculture in an extraordinary degree. So much time and strength have to be expended on the daily journey, and to lighten this labour, all farmers and husbandmen, with the sole exception of day labourers, have asses or mules, without which they could scarcely get on.

Among grains there are cultivated wheat, rye, oats, barley, millet, maize and rice, the last only in swampy districts. The mode of tillage

is as various as possible. On the wide plains of Apulia they use the best American machines for sowing, reaping and binding into sheaves, as the soil is flat and it is necessary to be sparing of human labour, there not being many people there. In the stony mountain land the peasant or day labourer has to dig up the whole field with the hoe (*zappa*), for the hillside is either not suitable for a plough or the piece of ground is too small or too stony, or perhaps the owner has only one donkey, whose strength is insufficient to plough up the heavy clay of the soil. This hoeing is a heavy and wearisome business; it takes place at the end of winter when the snow is gone and the ground is becoming somewhat drier. Almost the whole of the poorer population go out for this work as day labourers, but they are miserably paid. The man receives 7*d.* or 8*d.* a day, besides his keep; the woman, who does nearly as much work, receives from 4*d.* to 5*d.* Larger farms on a gentler slope or on the elevated plains are ploughed, though often with difficulty on account of the fragments of limestone. Cattle, asses, sometimes teams of a mixed character, are used as beasts of draught, and if necessary the man or the woman will help to draw the plough. Many of the ploughs consist of a worn-out weaver's beam with an iron shoe, and are so primitive as not to differ in construction from an ancient Roman plough. Such instruments are of no use at all for a tough clay soil, with clods so firm and adhesive that the seedlings are often unable to penetrate them, and it is not to be wondered at if seeds give but a poor return where these are not sufficiently broken up.

Wheat fields are found chiefly in the lower districts, where the soil is heavier and better. Sicily is a wheat producing country. Rye and oats cover the poorer fields of the Apennines, and oats especially grow high up in the mountains, where, it is true, the crop is but a scanty one.

Although so much arable land is devoted to corn the yield is insufficient for the consumption, even with the addition of maize and rice, the meal of which supplies the people with their chief article of diet. Wheat especially has to be imported in considerable quantities every year, then rye, barley, and even maize. The deficiency is made up chiefly by importation from India and America. Oats are often used as green food.

The harvests from 1870-74 amounted on an average to

17·8	million	qrs.	of	wheat
10·6	„	„	„	maize
2·7	„	„	„	oats
1·4	„	„	„	rye and barley

In 1890 and 1891 the numbers were

15·9	and	17·1	of	wheat
9·1	and	8	of	maize
2·3	and	2·4	of	oats



PLAN OF TERRACE CULTIVATION AT MAJORIE, NEAR AMALFI.



The values of the imported wheat were

1876	£2,876,000
1877	1,672,000
1879	2,868,000

The quantities were

1892	1,000,000	tons
1893	570,000	„
1894	540,000	„

Thus we see that wheat stands first among Italian grain both in production and importation. It is used in making bread and macaroni. Rye and barley come last, owing to there being no manufacture of beer on a large scale.

The sowing of winter and summer corn takes place in Sicily at the end of October and in February respectively, in Northern Italy a month earlier and later severally, and in the sulphur districts the smelting of sulphur has to cease at the beginning of December, when the seed begins to grow, as the young plants would otherwise be injured by the fumes. The harvest takes place in the months from May to July, or even August in the mountains.

Where agriculture is carried on on a large scale threshing machines are used. Small farmers still use the threshing floor, a flat circular area enclosed by a low wall where the grain is threshed with sticks or trodden out by oxen. This "platea" lies as a rule beside the farmyard, as the uninterrupted summer weather permits the threshing to be done in the open air, the sheaves dry quickly and the grain can be quickly freed from the husks. The gigantic uniform barns, which a German farmyard is never without, are wanting in the Italian farmsteads. One peculiarity of the country round Foggia consists of the underground silos for corn. The grain, in accordance with ancient custom, is covered with slabs of stone, these again with earth, and there it is kept till it is sold.

Grinding takes place in steam mills in the seaport towns and in water mills in the upland valleys. Windmills are only used at the western point of Sicily, while on the mountains, with their changing currents of air, they are scarcely known. The stories in German fairy tales and children's books of the ass laden with corn, being driven to the mill, which is seldom actually seen in Germany, is an incident of daily life in Italy, as the peasants and small proprietors descend the stony ways to the *molino* with one or two asses, that is with two or four sacks of corn. These mills grind the corn in autumn and winter, when the streams contain water, but are often at rest for months in the summer, and at Caposele it is considered a great advantage that the

river collected underground gives so much water all through the year as to be able to drive the mills at any time. For the most part the water is scarcely sufficient to set the primitive wheels and heavy mill-stones in motion, so that in order to increase the force of the falling water it is conducted to the summit of a tower so as to fall as nearly as possible vertically on the buckets of the wheel. The mill itself clings like a little box to the tower and takes up very little room, for no one can dwell down there owing to the fever; the miller sleeps up in the village, and the asses require no stable. As has already been indicated Italy possesses good millstones, but the manufacture is behindhand, for the stones in these mountain mills are often of truly monstrous size. Even the hand mills which were to be seen in every house in ancient times are still to be found and are used by the poor to avoid the miller's fee. In Sicily one stone of this kind is held suspended over another by cords and the housewife gives it a turning motion after pouring the grain into the space between them. The meal thus prepared at home is coarse and seldom clean.

Maize (*Zea mais*) is one of the most important breadstuffs in Italy and is cultivated for that purpose wherever it is warm enough. The ripe cobs are broken off, sheaths and all, and slowly dried in the sun, often on balconies or house-walls, and either beaten, or, which is better, pulled apart, by women and children or people unfit for other labour. This species of grass suffers from many kinds of blight, one of which causes the cob to swell up into a barren lump of the size of a man's head. Its ravages can be checked, however, by timely removal of the part affected. The maize is either ground or bruised; it almost entirely takes the place of rye, which does not grow in this warm climate so well as in Germany. Maize flourishes best on sunny slopes, but it is also grown in damp places and even in soil which is temporarily swampy, and besides the grain the leaves are used for green food, for plaiting (as in bottle sheaths) and for bedstraw, and its stems for fuel. The cultivation of maize occupies in round numbers 5,000,000 acres of ground, the largest part being in Venetia, the Emilia, Umbria and Lombardy, while it is but little practised in the Islands of Sicily and Sardinia. The maize harvest amounted in

1884	to	92.6	mill. bshls.	1889	to	80	mill. bshls.
1886	„	82.5	„ „	1891	„	70.1	„ „
1887	„	81.1	„ „	1894	„	58	„ „

There are many ways of preparing this corn for food after it has been ground or bruised. In the mountains it often appears as a tough yellow doughy bread, in some places it is treated with water and salt and cooked so as to form the polenta which is so indispensable to the

working classes in Northern Italy. It is also employed for the smaller kinds of macaroni.

Rice (*Oryza sativa*) only flourishes on swampy land that can be flooded for a long time and therefore must be flat and low. The plain of Lombardy in the neighbourhood of the Po, between Milan and Alessandria, and further on Venetia at the mouth of the Po, contain extensive rice fields that either are or can be under constant irrigation. All the winter until the spring comes these lie under a few inches of water, they are enclosed by narrow low dams along which run the canals for filling or emptying them. So large a part is played in this district by the right of using water that the word *rivals* has been derived from *rivus*, a bank, and the disputes about the water the banks contain. These fields must be thoroughly levelled after the tillage, and when the rice begins to appear, in order that the water may run uniformly over all portions and may protect the plants from the frost. The continual dabbling in the damp ground produces fever among the labourers and also a disease of the skin called pellagra, which is widely spread in Venetia. The development of this disease is assisted by bad sanitary arrangements, especially in the dwellings, and by living almost exclusively on maize. It is also widely spread among the labourers in the maize plantations. It is caused in both cases by the fungus which is transferred from the plant to the human beings, giving rise to an inflammation of the skin which after a transitory improvement returns in the following year, and ultimately leads to general failure of strength and to death. On account of this disease and malaria the cultivation of rice is disliked and has much diminished in extent in Sicily and Tuscany in consequence.

Italy is the only country in Europe that produces rice in any important quantity and in spite of its own large consumption of rice foods (e.g. *risotto*) it exports this grain. Italian rice is indeed better than the cheaper rice produced outside Europe, so that the one is imported and the other exported at a profit, and the country is able to send away some 100,000 tons annually. The difference of value amounted to

£484,000	in	1876
284,000	„	1877
648,000	„	1878

In 1890 over 475,000 acres in Piedmont, Lombardy, Venetia and the Emilia were sown with rice and produced a return of 17,500,000 bushels. This rose in 1891 to 19,250,000 and in 1892 to 20,000,000. Since the period from 1870-1879, however, the production has receded by fully a quarter, for then 570,000 acres were planted with rice. The consumption of this grain is said to amount to 50 lb. per head of the

population, a very high figure, which is explained, however, by the liking the Italians have for farinaceous foods.

Besides cereals there are leguminous vegetables, French beans, peas, lentils, broad beans and vetches, which are cultivated on wide stretches of land and form an important part of the food of the people. In 1890 and 1891 some 10,000,000 bushels of these were gathered, principally indeed in the northern provinces of the mainland. French beans may often be seen sown in rows between the vegetables and other garden produce to serve as lines of division between the several plots, and then again under the vines or orange trees, so as to make double use of the ground. Frequently after the corn has been cut for green food beans are made to follow and thus give a second crop. They begin to blossom in Southern Italy at the end of March, and they are gathered in July. Young hog beans are brought unripe into the market as early as April. Beans serve for vegetables or dessert and are consumed in great quantity raw, green or dry. Some of these leguminous vegetables are exported.

Another edible fruit is the Spanish chestnut. This makes its appearance on the table of the Italian boiled or roasted in various forms, and to some extent takes the place of the potato. From 1870 to 1879 there were on an average 1,120,000 acres occupied by chestnut trees, a number which had slightly diminished in the 'nineties (1,020,000 acres). The yield varies, of course, in different years, and for a plentiful crop of fruit the tree as a rule, requires some rest, in the same way as our stone fruit. The foliage of the woods and thickets of chestnuts yields straw and manure, the wood serves for the manufacture of charcoal and casks. The mealy fruit is gathered from October onwards, and the gathering forms, so to say, a country festival for the people, and immediately afterwards the fruit is being roasted and sold in all the streets. The cultivation and yield have retrograded owing to the fact that Switzerland, France, the Tyrol, the Crimea and even South Germany have planted this tree extensively, and are now able to supply their own needs. It is a striking fact that the chestnut tree does not produce fruit in the plain of the Po, a phenomenon which apparently goes back to the time when it was first cultivated. The production was—

1870-79	1890	1891	1892
568,613	297,808	291,560	323,274 tons

Stone fruit, pears and apples do not flourish in the warmer portions of the country so well as in Germany. The fruit is deficient in aroma and flavour. Wild apple trees and pear trees are found tolerably often among foliage trees or in the forest. The best kinds of apples are the limoncelli, small, longish, rather acid apples, and the meloncelli; the

best pear is the bergamot. Cherries, peaches and apricots are sent as early and choice fruits to the northern countries from Italy, where they ripen earlier.

The country further produces sweet almonds, as well as those which are designated bitter from the amount of prussic acid they contain. The blossoms, which recall those of the peach, come out in February, so that some places, such as the Posillipo, near Naples, seem to be covered with red snow. The export of this fruit is very important ; its value in 1891 was £810,000, and in 1893 there were 5,300 tons sent to Germany alone. Almonds are either eaten in pastry or at dessert or they are distilled to yield almond oil, which is used as a medicine, as an ingredient in perfumery, or as grease in the manufacture of fine soaps.

Finally nuts, both walnuts and hazel nuts, are gathered and exported in large quantities. The slopes of the Apennines are often densely covered with hazel bushes ; the fruit is gathered in July and put on board ship in the harbours of the Apulian coast. Germany takes a great quantity thence at Christmas. There is the peculiar custom in Italy of roasting the hazel nuts, which gives them a pleasant almondy flavour, and these nuts roasted in the shells and then taken out of them are to be bought in all the streets in winter and spring.

One of the most important products of the land is wine. The grape introduced from the lands of the eastern Mediterranean had already occupied large tracts of country in the time of the Romans, and from Italy it followed the Romans into Gaul and the Valley of the Rhine. Roman poets praise the native wines. Horace, for instance, praises Falernian, that grew in the district that is now Campania. Representations of vine-clad hills, of wine-pressing, of drawing off wine from wine skins into vessels of clay, and of drinking wine from bowls or drinking horns have come down to us in great number in reliefs, wall paintings, or objects in terra-cotta.

The manner of raising the grapes is very different in different places. Those of Northern Italy, especially the Trentino, grow in arcades, the vines twining together by the tendrils above and the grapes hanging freely underneath, but care has to be taken that the leaves do not keep the light too much from the ripening fruit, and the foliage must therefore be assiduously thinned by cutting or picking. In Campania the grapes are grown between poplars and mulberry trees, the stem of the vine being supported by the tree and the branches spreading out on both sides in the spaces between, and are so bound together with light reeds as to form a green wall, to which the grapes hang freely so that the sunlight can reach them. The third method is to plant the vines separately,

as in the German vineyards, and to support them with poles where wood can be had and is not too dear, otherwise with reeds, which are light and cheap and yet strong. These are piled like muskets and bound together, affording a point of support for the tendrils.

In spring, say March or February, according to latitude, the stems are pruned, the binding is renewed, and the pyramids of reeds, set up. The vintage follows in September or the beginning of October, and in the mountainous parts of Southern Italy lasts the whole of October.

The Roman vintage has been the subject of many recent pictures; the animation of the people, their picturesque costumes at the vintage



DRAWING OFF WINE FROM A LARGE WINE SKIN INTO EARTHENWARE JARS  
(AFTER AN ANCIENT PAINTING).

festival and the dances of the Campagnole, with their free and unrestrained movements, could not but attract and delight the artists. The vintage is prosaic enough in the mountains, where the grapes have to be brought home in tubs hanging on the two sides of an ass, and the journey up and down the mountain has to be made all day long, or it may even be that the tub has to be carried down on the head. There is nothing beautiful in the appearance of a trough of this kind filled with grapes half mashed with shaking, and the uniform shrill cries used to the ass do not remind one of the animation of the tarantella. In the Southern Alps the vineyards are guarded by special watchmen before the grapes ripen, and are closed against intruders, while in other parts they are not so particular.

Vines flourish everywhere, with the exception of the barren heights, and next to water wine is the commonest drink.

There are the widest extremes in the modes of pressing the grapes. Large vineyard holders have machines of the latest patent with hand or horse power, and in autumn all the papers are full of notices recommending this or the other as the best mode of pressing grapes or olives. The small proprietors of the Apennines, on the contrary, tread out the juice with their feet according to time-honoured custom; and it is even considered as a special recommendation of the purity and goodness of the wine to say that it has been trodden out with the feet. It is quite true that the astringent tannin of the husks is not squeezed out by this primitive method, and that the wine is consequently sweeter and better flavoured.

Between these two kinds of wine-pressing stands the antiquated machine with a huge lever arm on which several men hang together to squeeze the juice from the grapes. The skins are still further used in the preparation of brandy, and as there is a tolerably high duty on this, a number of revenue officers are sent down every year to supervise the production and prevent evasions. The refuse of the grapes is given to the pigs, or thrown away.

The must is placed in vats to ferment and clarify itself. The wine of the Romans is said to have always remained turbid, so that it had to be strained. In this respect a simple peasant is better instructed and understands how to clarify his wine. The cool roomy cellars of the volcanic districts which can be dug out with ease in the tufa are of great use. In the Alban Mountains, on Monti di Procida near Naples, on Monte Vulture et Rionero. Rapolla and Barile the earth is quite riddled with these cellars. The vats are made, as a rule, from the wood of the Spanish chestnut, which gives excellent tough staves.

The wine comes to the market in butts or smaller barrels (*barile*), of which those most commonly used hold from eleven to twelve gallons.

The ancient mode of storage in skins is by no means discarded. Here and there may still be found, hanging on the walls of the living rooms of the peasants, pigskins and goatskins filled with wine, but larger quantities are no longer placed in the hides of oxen or horses, but only in casks, which are far safer. Storage in earthen vessels is quite obsolete, though this was the prevailing manner in ancient times, a wine cellar of Pompeii presenting a very different appearance from one of the present time. Monte Testaccio in Rome is said to have been built of the fragments of the wine and oil jars of the store-houses of the time, for the imports of the city, with a population counted by millions, from abroad, from Southern Italy, Sicily and

Greece, must have been enormous. Among the better sorts the poets praise Falernian, Cacuban and Massican wines, all three from Northern Campania, besides mentioning Surrentine, Mamertine, and at a later time Rhaetian wine, imported from Switzerland and the district round Lake Constance.

The vineyards suffer from many kinds of parasites, both vegetable and animal. Mildew (*Oidium Tuckeri*) forms a white coating over the leaves, causing them to shrivel and turn brown; to this the muscatel and allied kinds of vine are specially liable, and the disease due to this fungus often affects wide districts on the southern slope of the Alps, assisted by the greater damp. Washing with lime and flowers of sulphur is held to be the best means of extermination, but carefully removing all fallen leaves in the autumn and burning them is more efficacious. A second fungus which also attacks the leaves is *Peronospora viticola*, against which sulphur and sulphate of copper are used. Ten years ago great damage was done to the Italian grapes by the grape louse (*phylloxera*), though these showed themselves better able to withstand its attacks than the vines of Bordeaux. Italian viticulture, with the exception of that in Piedmont, seems to have tolerably recovered from its ravages. It required, however, energetic measures to prevent its destroying the whole of the wine industry.

There are no very marked differences between the different kinds of vine. Black and white grapes are grown together; then there are intermediate kinds, such as the muscatel, and the common wines of the country are made without regard to the quality or colour of the grapes. In general the red varieties and red wine predominate, white wines being only produced locally and forming a peculiarity of certain provinces. The character of the wines changes as we get further south, becoming heavier and fuller till we come to the dessert wines of Sicily and Calabria, which contain the largest proportion of alcohol. In spite of some undeniable progress the treatment of wine in Italy is still far from perfect. Most wines are not kept longer than a year or two and are consumed within this period. Very little is fitted for exportation, and much even of that has to be fortified with sugar or alcohol. The superfluity of wine is sometimes extraordinary. In 1890 the vintage was so plentiful that the whole of it could not be stored, and in Melfi and Rionero the price sank to 4½*d.* a gallon, the ordinary price being from 1*s.* to 2*s.* 6*d.*

The following particular kinds are best known: Valteline, a red light wine of pleasant taste and purple colour, growing in the Adda Valley at Lake Como and its neighbourhood; this is exported largely into Switzerland by the valley of the Ticino. Southern Tyrol and the

adjacent portions of Italy have a similar red wine, called Trentino, of Trent and Roveredo, and a white one, Terlan, of Bozen. A white grape flourishes on the hills of Montferrat near Asti, which is used for making sparkling wine (Asti spumante). Other kinds of wine in Northern Italy are Barolo from Piedmont, Nebiolo, Barbera, Valpolicella from Verona, and Lambrusco from the district of Modena and Bologna. In Tuscany the red wines begin to have more body. The most famous of these is the *Vino di Chianti*, which name is given to a great deal of Tuscan wine. This is put up and sent away in long-necked bottles of thin glass (*Fiasco*) covered with straw.

As these flasks are open and only kept from the air by a film of oil, the boxes must not be turned over, and they have consequently a triangular cross section so as to be able to stand only on the base, which is broad and flat. The oil is removed with cotton wool, and the topmost drops of the wine are poured away, else there remain some spots of oil, which, however, do no harm if the oil is good and has no taste.

Much wine is grown around Rome on the hills towards Bracciano, as well as on the Alban mountains. These wines—some white, some red, or intermediate—are called *Vini dei Castelli Romani*, and are advertised and sold throughout Rome. In August the whole plain of Campania resembles a huge vineyard. Its best positions are to be sought on the hills of the Phlegræan Fields. The foot of Vesuvius, the slopes of Monte Ipomeo in Ischia and the cultivated portions of Capri are covered with vines. The red wine produced is somewhat fiery, but not too alcoholic or sweet, and there is also a light, somewhat acid *vin ordinaire*, grown at Pignataro and further up towards the mountains, one kind of which, called *Asprigno*, is slightly effervescent. The wines of Vesuvius and Capri are really good growths. It is true that what is set before foreigners as *Lacrimæ Christi*, *Vesuvio*, *Capri bianco* or *rosso* are the vilest concoctions, often hardly to be called wine. White wine diluted and treated with sugar and spirit is sold as *Lacrimæ Christi*. With others it is only the label of the bottles designated *Capri*, *Falernio*, *Vesuvio*, which are different, the contents being the same. Whence could all the wine come which is sold under these names? *Capri* could only produce a small amount, and the better *Vesuvian* wines are drunk by the inhabitants themselves.

Many of the Campanian wines are acrid, some have an earthy flavour, but it is only possible to get to know the real character of these wines in the country, as in the towns they are often tampered with and adulterated, to give a fuller flavour to inferior wine. These native country wines have no special names, but go under the common

designation of *Vino di paese*. At village festivals they are often served in long-necked flasks marked as holding a quarter, a half, or a whole litre, and drunk straight off from these receptacles. All through Italy we find coloured stoneware jugs of chalice shape, with a spout and two lips at the sides of the upper rim, which is widened out so that two or three people can drink out of the jug as it stands between them, each drinking at his own place, and when playing at dice or cards the jug, which is paid for by the company or by the loser, passes round. Lastly, among the special wines of Campania we must not forget Episcopio, grown on the plateau of Ravello. The sweeter and fuller wines of Monte Vulture and the eastern slopes of the mountains of Apulia go, as a rule, to Bari and Barletta, and are thence sent into the world with labels bearing the names of these towns.

Northerners can scarcely form a conception of the abundance of the grapes in this district. The streets of Rapolla are actually red in autumn, and the scent of the wine can be observed a mile from the town. A few years ago, however, there were great difficulties in the sale owing to the want of a railway. This has been in course of construction since 1897, and is now open for half its length.<sup>1</sup> Previously the casks had to be conveyed in carts down to the railway at Foggia, and lost by leakage in the repeated unloading, besides other injuries from being shaken on the long mountainous roads. The wines of Lecce and Tarentum are less known, but there are kinds from the south of Calabria, Gerace, Reggio, etc., which are brought into the market. These remind one of the wines of the Greek islands in body and in the amount of sugar they contain, and can only be used as dessert wines. The Lipari Isles have a tolerably important export trade in wines, which we often see advertised in Naples under the generic name of *Vino di Lipari*. Finally, Sicily is a wine-producing country. Carefully tended vineyards occupy the foot of Etna, and the districts round Girgenti, Palermo and Trapani produce wine. The better known wines of Marsala and Como are fortified for export. The former grows on the western end of the island, and thousands of casks and bottles are annually sent away by English houses and by the firm of Florio.

The *Vermouth di Torino* is a white wine flavoured with absinthe, a refreshing drink much liked in the country, which has been adopted abroad during the last twenty years and has gained a secure footing there.

The entire yield of Italian wine has been put down at 528,000,000 gallons and valued at £40,000,000. This is far more than is consumed in the land itself, so that a considerable part must be exported. 11,550,000 gallons were exported in 1878, and 24,420,000

<sup>1</sup> It is now (1901) open to Rampolla. (Trans.)

in 1879. On an average there were from 1884-1891 about 660 millions of gallons produced (877 in 1891, 748 in 1892), and the area under cultivation has nearly doubled since 1870. The export amounted in 1892 to nearly one-tenth of the whole amount, viz: 52,800,000, one-tenth of which again went to Germany. In 1891 the export amounted collectively to £16,000,000, to which must be added £700,000 for argol (or crude tartar). So long as the ravages of the phylloxera lasted in France, especially in the 'eighties, large quantities of wine were sent to Bordeaux from Southern Italy and Sicily, in order to be re-exported as claret. Since the improvement brought about by the introduction of American grapes, and the greater productiveness of the new plantations, the import of wine from Italy has diminished, and the duty imposed after the abrogation of the commercial treaty of 1888 is too high to allow of the introduction of the cheaper kinds of wine. Attempts have been made to make up for this loss in Germany, and the Società Enologica Italiana has opened branches in the larger German towns and has done all it could to promote the importation. For some time the Bodega Company established houses in all the centres of trade, with the object of selling Italian wines by retail, but Greek, Spanish, Chilian and Cape wines soon competed with them successfully, the Italian wines being too varying in quality and not keeping well enough. To this was added a movement against foreign wines on the part of German vintners, accompanied by a series of good vintages in Germany itself. Brands such as *Vino di Bari* and *Vino di Barletta* were at one time met with everywhere, but have now to a great extent disappeared. On the other hand, quantities of Italian grapes are sent every year over the Mt. St. Gothard railway in trucks to Alsace, Baden, and the Palatinate, in order to be added to the native must, and make it richer in grape sugar and fuller in flavour.

Austria-Hungary has also taken measures to protect itself against the competition of Italian wines, by means of exceptional provisions in the last commercial treaty, in order to keep out the cheap kinds of wine from Calabria, which might injure the cultivation of the vine in South Tyrol, Styria and Hungary, and a struggle, growing ever more keen, is in progress between the two countries over these clauses. It is only by better superintendence, a rational method of wine-pressing and care to make the produce uniform in quality, that Italian wine can gain a permanent place in the markets of Europe. Societies like the Società Enologica Italiana have attempted, with Government assistance, to bring about a better state of things so far as has been possible under existing commercial and economical conditions.

Besides spirits of wine, vinegar is produced from the poorer kinds of wine, and so plentifully that other kinds of vinegar, such as that made from beer or wood, are unknown. Vinegar often retains a faint reddish colour from being manufactured from red wine. The argol precipitated in the casks during fermentation is bought up by several business houses and exported to the value of £700,000. It is applied to the manufacture of the tartrates used in medicine for effervescent powders and emetics, and in chemistry for vinous acid and its salts.

Next in importance to wine comes olive oil. It might even be given precedence, for the Italian could get on without wine, but not without oil. It gives him light, and is used in the preparation of almost all articles of diet, butter being but little employed and impossible to keep good in the south. The olives are gathered in autumn by striking the boughs with long sticks; the ripe fruit falls and is picked up afterwards. After the fruit is gathered the soil round the trees must be loosened to allow the winter rain to get to the roots. The wood of the olive tree takes a fine uniform polish with a dark and pretty grain, on which account it is used for many *articles de luxe*, especially those made of inlaid wood. Pieces of any size, however, are rare and dear because the cross section of the stem is small, and in old trees it is apt to be hollow.

There are bright green and dark violet and black kinds, distinguished rather by the colour of the fruit than by the quality of the oil. The finest oil is obtained from ripe selected fruit crushed in linen by the hand, an operation similar to that in the case of wine. For ordinary kinds the olives are crushed in a mill, even the refuse being made to yield a sour offensive oil of small value, by treatment with bisulphuret of carbon. The pure oil is light yellow or greenish yellow. It becomes cloudy at 36° F. and completely congeals at 32°. Impure mixtures precipitate a white crystalline mass even at 50° F., as may be noticed in winter in the bottles hanging outside the oilshops.

The olives themselves are made much use of for food or are steeped in brine and served up as a condiment to meat as gherkins are in Germany. The oil is used in frying and has by no means an unpleasant flavour, but after long boiling it smells, in consequence of incipient decomposition, especially as the best kinds are not used in the kitchen. The favourite dish of the Italians, called *fritti*, is prepared in hot oil or grease, and the smell of fat is consequently widely diffused from the open doors of the cookshops in the narrow streets of Naples or Syracuse. Oil is used to give light, as it formerly was in Germany and as it was in ancient Italy two thousand years ago. The numerous lamps of clay or bronze found in Pompeii might still be used, as exactly the same forms are employed in country places. Petroleum is dear, partly as being

imported, but also on account of the high import duty imposed to protect the olive industry (1s. 8d. per gallon), and is only burned by well-to-do families. The poor sit round their flickering oil lamps in the evening or go to bed when daylight fails.

The greatest quantity of olive oil is exported from the harbours of Apulia and Sicily. *Olio di Bari* is considered a good brand, as the olive tree flourishes excellently on the slope of the Apennines, in Murgia and in Terra d'Otranto. It has to stand a long time to deposit many substances which are injurious to the oil, and is best drawn off in autumn by means of syphons, which do not stir up the sediment. In northern countries, North America and Russia are the best customers, while France is excluded, having an olive cultivation of her own in Provence and at the foot of the Pyrenees, so that Italy even finds her a formidable competitor. The average annual production amounts to 33,000,000 gallons, of the value of £8,000,000. In 1891, owing to an unusually plentiful olive harvest, it was 60,000,000 gallons; in 1892, 36,000,000. The export in 1878 and 1879 amounted to 25,000 tons and 22,000 tons respectively. The value of the export in 1891 was £2,500,000, to which we must oppose £600,000 for imported petroleum.

The competition of Southern France and Spain is also felt in the region of the production of southern fruits. These, designated as *agrumi* (from *agro*, acid), sweet and bitter oranges, citrons, lemons, etc., grow in every part of the country where the winter frost is short and not severe. The chief districts, as before said, are Sicily and Southern Italy, Naples, Catania and Palermo being the harbours of export. The number of varieties amounts to several hundred, among which we may distinguish as leading groups the true citrons, the *cedrato*, with thick skins, the thin-skinned acid lemons, the sweet lemons or limes and the sweet and bitter oranges (*Portogallo*, *Arancia*), as well as the small mandarines. All these are cultivated in special gardens reserved for them alone. They bloom in March and April, covering the dark foliage with thousands of white flowers, perfuming the whole air in the orange-producing districts. They ripen in December and January. The mandarines are ready for picking in December, the larger oranges and lemons from January to March, when they are shipped. Any fruit that is not quite ripe is left, the golden fruit thus hanging on the tree beside the blossoms. Where there are frosts in the night they have to be covered up, as the juicy fruit cannot withstand frost.

The mandarines and larger oranges are packed and shipped when not quite ripe, though of course in the country itself they are only eaten ripe. In Sicily they generally cut the lemons in two, at least such as

are to be used in the manufacture of chemical products, as they take up less room when packed in the casks. The juice is drained off later and used with the rest of the fruit. Hundreds of these large lemon casks are to be seen in Catania and Messina, as they are being landed empty, filled again and sent away full. Russia used to take great quantities of lemons, as it is the custom there to drink tea with a slice of lemon in it. This export has, however, somewhat retrograded since the establishment of agrumi in the Crimea and Transcaucasia. Large consignments go to England and Germany, partly for eating purposes and partly as the raw material for the manufacture of citric acid, oil of lemons, aromatic bergamot oil (distilled from the rind of *Citrus Bergamica*) and other substances. In 1890 it was computed that there were 17,000,000 orange and lemon trees, each bearing on an average 230 fruit, and that the value of the whole amounted to £3,600,000. In 1891 the export was valued at £968,000, and besides these agrumi and the almonds there were £420,000 for other fruits. Some four thousands of millions of individual fruit were gathered in 1891, and three thousand millions in 1891 and 1892.

Figs, like agrumi, are left on the tree as long as possible, as they quickly go bad when once plucked owing to their juiciness and softness. The wood and unripe fruit contain an acrid milky sap which is said to protect them from being devoured, but does not attain its end, as the trees suffer injury from many kinds of insects. Large fig trees may produce as much as two hundredweight of fruit, and this, for the most part, at all ages of the tree. The inflorescence is within the fig and is surrounded by the succulent receptacle. The fertilisation is very complicated and is said to be accelerated in the case of the cultivated fig by a gall insect living in the fruit. They fasten fruit of a wild fig which has been visited by this insect on the stem of the cultivated variety and thus the animals pass over the fruit of the latter as the former dries up. This method is called caprification, and is explained by some to be absolutely essential, while others consider it superfluous.

The cultivation of hemp has been rising in importance during recent years. The fibres are finer, more elastic and therefore easier to spin than that of Russian hemp, and it is much esteemed. The plant is cultivated principally in the Emilia, Venetia, Umbria and Campania, but requires a rich, well manured soil and assiduous ploughing. Italy produced some 75,000 tons at the commencement of the nineteenth century, which were partly worked up in the country itself and partly exported in the raw state. The cultivation and manipulation of hemp give employment to some half million of people. The export amounted in 1891 to £960,000. Beside hemp stands flax, which is often raised only for the linseed. After the Emilia and Apulia the

chief part comes from Umbria, Campania and Sardinia. The whole amount of the yield in 1890 and 1891 was 20,000 tons.

Cotton is a third product of Sicily, Sardinia, Apulia and the Basilicata, as it requires a mean temperature of 77° to 86° F. This industry has undergone many vicissitudes according as the crop from countries out of Europe was plentiful or the reverse. Extensive areas in Sicily were planted with cotton in 1864-5 during the American Civil War. The export of cotton rose high at that time, but fell back subsequently to the former amount. At present Italian cotton is of no importance in the markets of the world. It is chiefly worked up in the country, especially in the spinning and weaving factories of Salerno and Nocera. Cotton was exported in 1891 to the value of £768,000, but the value of imported cotton was £3,896,000 in addition to £1,568,000 for manufactured cotton goods.

Sumach, madder and licorice, chiefly coming from the southern districts, may also be mentioned. The sumach (*Rhus coriaria*) is cultivated in Sicily and Sardinia and yields valuable tannin. Most of the licorice comes from Calabria and Sicily. It is a shrub belonging to the Papilionaceæ (*Glycyrrhiza glabra*), the thickened sap of which is the substance called licorice, for which it is regularly cultivated. The madder (*Rubia tinctorum*) is planted to a considerable extent in the valley of the Sarno in Campania and its root is the raw material of the showy Italian or Turkey red. The annual production is said to amount to 20,000 tons of the roots.

Saffron, derived from the stigmas of *Crocus sativus*, is used as a yellow colouring material. The plant has been grown in Sicily since ancient times and now enough is raised to cover the native demand, but what remains over for the rest of Europe is scarcely worth mention. The indigo plant (*Indigofera tinctoria*) has been acclimatized for its blue colouring matter, but in consequence of the artificial manufacture of aniline and other products derived from coal tar the price has gone down and the cultivation of the indigo plant, which requires much time and labour, may be considered a thing of the past.

The cultivation of tobacco, on the other hand, has increased of late years. In consequence of the monopoly, information has to be given of the number of plants to be raised every year, and the yield is rather heavily taxed. There are fields of tobacco in Campania, Tuscany and some other provinces. In 1894, 11,500 acres were under cultivation, with an average production of 5,700,000 tons, as against 6,750 acres and 1,900,000 tons in 1891. The cultivation requires the supervision of the agencies who take account of every individual plant for the purpose of taxing them. In 1894 there were nearly 73,000,000. But as the people are passionately devoted to smoking and snuff-taking

great quantities have to be imported, and the Regie has lately introduced North American tobacco suitable for making the stronger kinds of cigar, which are much liked. Imported tobacco was valued at £600,000 in 1891, and weighed 13,900 tons, while in 1894, in consequence of the improved home crop, it fell to 11,300 tons.

Reeds (*Arundo donax*) are raised in the moist, low-lying lands of the Simeto, in the Pontine marshes and the valley of the lower Ofanto. These are called by the people *canna* and serve instead of vine stakes, as wood is scarce in the country. They are also made use of for coverlets, mats in houses, and for wickerwork. The sugar cane (*Saccharum officinarum*), which is nearly allied, is only cultivated in Sicily, as it requires a good deal of heat, but in the last decades the cultivation has much retrograded in consequence of the extensive manufacture and low price of beet sugar. Papyrus occurs in large patches in Sicily (*Cyperus papyrus*). Near Syracuse there is a bed of papyrus which is often visited by foreigners, and papyrus paper is made from it as a curiosity.

The potato takes by no means the important place among kitchen plants which it does in Northern Europe, for only about 750,000 tons are produced, while in Germany the potato crop amounts to 18,500,000 tons. The heat of the southern provinces keeps it from flourishing. It is watery, poor in starch and quickly goes bad. It is in great part replaced as a national food by maize. It is found, however, in the mountains where rye and oats are grown, though it is true that it is used chiefly for feeding pigs. The different kinds of cabbage are very numerous. Of these we may mention besides cauliflower (*Cavolo di fiore*) and rape, savoys or crisped cabbage, and the two kinds of broccoli (*broccoli di fiore* and *broccoli di rape*). Fennel, artichokes and tomatoes are much eaten, also onions, garlic, and all kinds of tasty fruits such as pepperpods and cucumbers. Fennel is raised in beds and brought to market from March onward. The aromatic taste in its thick succulent shoots makes it a pleasant refreshing flavouring for wine, and nearly everyone in town and country uses it. In the same way the root of the wild fennel is used in preparing many dishes.

The artichoke is one of the Compositae, and its fleshy receptacle is prepared for the table in various ways. The plant was first introduced into Sicily in the twelfth or thirteenth century, and into Venice in 1743, not reaching Germany until the nineteenth century. The tomato, or love-apple (*Lycopersicum esculentum*), came originally from South America. Its red fruit is eaten raw and the juice is used as a condiment in numerous dishes. It is planted in all lowlying districts and is an important product of the kitchen garden. The red juice is inspissated and tinned for exportation (*sugo*). The egg plant, an allied plant also belonging

to the Solanaceæ (*Solanum melongena*), has blue or variegated fruit, which is used in autumn to flavour macaroni. Wild asparagus is frequently seen as a vegetable on the table in spring; the thin green shoots are remarkable for a bitter taste and for the large amount of asparagin they contain. Asparagus is raised on a large scale at many places, e.g., near Arco and Mori in the valley of the Adige and generally in Northern Italy, but it is not to be compared to the asparagus of Central Germany, as the shoots are allowed to get too long and woody.

All kinds of leek are eaten raw with salt. There is scarcely a dish without onions, though we ought to observe that these bulbs are not so strong in flavour as those in Germany, though larger. Leeks and onions are considered wholesome. Garlic is thought to be a preventive of cholera, and in the last epidemic at Naples it was scarcely to be had and was almost worth its weight in gold.

Melons, pumpkins (*zucca*), cucumbers in many varieties are important as means of subsistence in autumn. As we descend the valley of the Ticino from the Alps we see the yellow fruit and the trailing foliage lying right and left in the fields. Green water-melons are to be seen on the balconies or against the walls in Northern Italy, hanging in a packthread net with coarse meshes, often fifty and more at a time, as a provision for winter. The seeds of pumpkins and melon, (*semenze di cucuzze*) are also sold in a dry state, to be used with wines like pine seeds or beans, or to be chewed as a kind of diversion (*spassatempo*). Water caltrop, which grows in standing water, produces a fruit like a chestnut, which is used in making beads for rosaries. It is occasionally cultivated to a small extent in Northern Italy for this purpose.

The plain of Lombardy is covered by splendid meadow land, under water in winter and irrigated by numbers of canals in summer. The water and its covering of ice prevent the roots from getting frozen, which they might otherwise do in the severe frosts of Northern Italy, and with the assiduous care bestowed on levelling every hillock and mole hill, these meadows yield splendid crops of hay. In Piedmont and Lombardy it can be mown from six to nine times in favourable positions, and these districts are consequently the most important in Italy for cattle raising.

Looking at agriculture as a whole, it appears that it is the most important branch of industry in Italy, but that on the other hand it has to contend with many difficulties of internal and external Nature, and that these constitute the fundamental reason for the discontent and the oppressive poverty under which the lower classes suffer in places and which they seek to escape from by wholesale emigration.

External difficulties consist first of all in the competition of other

countries which produce corn, wine, oil and oranges. In respect to wheat, next to North America and India, the chief rival is Argentina, which has been rendered productive by the help of Italians. On the other hand, according to the latest information, Italy does not produce nearly enough corn for her own needs, but nevertheless, unless it is willing to be entirely dependent on the foreigner, it cannot give up the cultivation of corn, and thus a remedy can scarcely be found for the low price of corn on the one hand and the dearth that would be brought about by a rise in price on the other. For the people have either no work and no money or no bread. France, Spain and Greece export quantities of wine, oil and oranges, though Italy has closed her own country against them—this holds especially of France—and the mercantile ability of the Italians does not go so far as to be able to open new markets quickly and safely, all the less that the certain amount of absence of reputation for fair dealing attaching to all Italians frightens away many customers.

The internal difficulties consist, firstly, in the high duties, which enhance the price of machines and other material for labour, while rent forms too great a burden on the produce of the soil. Secondly, in the fact that so many small cultivators only farm the land, which belongs partly to the nobility, partly to religious institutions, partly to the Commune or the State. The attempt to bring about peasant proprietorship, by means of the opportunity offered by the confiscation of Church property, failed entirely, as the sale to joint stock companies was not prevented at the right moment (e.g. in Sicily). Then where there are peasant proprietors the land gets so split up by division among the members of the large families that a good yield can scarcely be obtained from the scattered patches of different kinds of land. Thirdly, in many branches, as in the preparation of wine and cheese, the methods are antiquated, while the cost connected with all changes makes it difficult to make improvements, owing to the smallness of the capital possessed by individuals, although much has been done in this direction during the past decade.

Those who have no land of their own become tenants, or, unfortunately, sub-tenants, as the ground landlords are willing enough for their convenience to hand over their property for a fixed rent to a middleman, which he in turn sublets to the country people proper. Rent is sometimes paid in kind, consisting of a fixed proportion of the gross produce. At a time of low prices payment in kind suits the sub-tenant, but is disastrous to the middleman, which explains the endeavour to get the rent as far as possible in money. Then the whole of the loss caused by competition falls on the cultivator, while the members of the two higher grades have no risk at all. It is comprehensible that it

is just by those classes who cultivate the fields that deep discontent and grinding poverty are felt.

The worst mode of payment in kind is the metayer system called "Mezzadria," under which, while the ground landlord pays the taxes and keeps up the farm buildings, he receives in return half of the produce of the estate (corn, fruit, cattle and manure). This tenure is the ruin of the peasants, for even if the lessee of a larger estate is doing well the small landowners suffer greatly, having to bear the loss in labour and in material, and only too easily they become dependent on the landowner, if he is to advance money as a loan or to prolong the tenancy. This mezzadria system is still common in the districts of Treviso and Belluno, in Sicily, and to some extent in Tuscany and Southern Italy. The agreement is often only concluded for one year and the tenancy commences on the 11th of November.

In other kinds of contracts between middlemen and sub-tenants, or between these latter and the proprietors, it is the custom to do everything by word of mouth, to avoid the high stamp duties, and this naturally gives rise to much contention and many lawsuits. The leases are generally short, seldom for more than nine years, and sometimes for one, two or three years.

Under these leases the cultivator of the soil has to undertake the whole risk, or, as the formula runs in the Venetian dialect "a fuoco e fiamma, a guerra guerreggiata." Frequently the sub-tenant again gives lodging in the farmstead to poor people under the conditions that they shall till the land for him. A further hardship is the circumstance that most peasants do not live on the land, but sleep in the towns, and have to lose time and fatigue themselves needlessly by a long daily journey to and from their work.

Those labourers who cannot afford to rent land work by the day, earning at most 1s. 3d. a day. Women earn less, often in mountain districts only 5d. to 7½d., on which, of course, they can hardly subsist. So that the least rise in the duty on corn or slaughterhouses or the hearth tax drives people to despair. The late violent troubles at Veralli made it known to all the world that day labourers in the rice fields do not yet receive 8d. regularly and are unable ever to attain to a payment of 10d. per day. Where work offers and the conditions are to any degree favourable the Italian works early and late on his bit of land and gets out of it whatever can be got out of it in any way. The laborious construction of terraces, the ditches and streams everywhere for irrigation, show that it is not to the laziness of individuals but to general conditions that must be attributed the misery and the rebellious disposition of the people. In Sicily there is also the depression in sulphur production, which used to give work and bread in

summer and autumn to thousands of unemployed day labourers.

In order to counteract the lamentable increase of debt among the small farmers, and to supply them with the means of improving their stock, in the way of cattle, seed corn and tools, a number of Agrarian Banks have been started, joint stock companies with limited and with unlimited liability, which, with the help of the State or the State-aided banks of issue, might come to the assistance of the poor, and they have often done so. Now, seeing how unsafe and stupid all financial undertakings of the kind in Italy are, how in money matters one man will not trust another across the road, no permanent remedy can unfortunately be expected from these institutions. On the contrary, the failure of these agrarian banks has already produced irremediable disasters.

Improvement in the condition of the poorer inhabitants of the country districts is only to be attained by an alteration of the system of tenure, the establishment of a moderate maximum rent proportionate to the fertility of the soil, abolition of the entirely superfluous middlemen, and in many cases the rational parcelling out of the *Latifundia*. So soon as manufactures arise they withdraw superfluous labour from agriculture, and thus daily wages are raised without lessening the consuming population, as is the case with emigration. Above all, it is important to regulate the irrigation, as, for instance, in Sicily, and as far as possible to make it available in summer also, so that a second tillage and a double crop may be brought about.

On the whole, Italy has 49,724,800 acres of productive ground, i.e., arable land, chestnut woods, woodlands and pastures; 4,976,600 acres are over 4,000 feet above sea level and either bring in little or are quite unproductive; 6,506,400 acres are untillable for other reasons such as fevers or want of water; 9,579,000 yield but a scanty return.

The following numbers are arranged on a somewhat different system.

	Acres
Plains or nearly level areas, watered . . . . .	2,964,000
Hill country, watered . . . . .	741,000
Plains or level areas, dry . . . . .	23,465,000
Hill country, dry . . . . .	20,995,000
Mountains . . . . .	11,115,000
Waste lands . . . . .	11,989,380
	<hr/>
	71,269,380

From these a land tax of £5,000,000 is raised at the present time, so that, neglecting the waste land, every acre is burdened with 1s. 8d. In the Basilicata it is from 3s. to 4s. an acre, according to the soil, and on an average the tax amounts to 3s. per head of the population.

The best soil is in the Emilia, as 55 per cent. of it is arable. Sicily holds the next place with 38·47 per cent. The following table, in which Tuscany and Sicily are compared, shows what a difference is made by climate in the yield of areas of equal size. Both are highly cultivated, and it might perhaps be asserted that Sicily is to a certain degree deteriorated by exhausting methods of cultivation. If, in spite of this, such crops are produced at present it may be understood how it was held to be the Pearl of the Mediterranean when it still enjoyed careful cultivation and good irrigation and how it became a bone of contention between different nations.

	TUSCANY	SICILY
Arable land . . . . .	3,397,000 acres	3,893,000 acres
Wheat . . . . .	3,145,000 qrs.	4,262,000 qrs.
Maize . . . . .	927,000 „	42,000 „
Other grain . . . . .	386,000 „	1,303,000 „
Pulse . . . . .	254,000 „	833,000 „
Potatoes . . . . .	69,780 tons	6,490 tons
Hemp and flax . . . . .	1,870 „	5,807 „
Hay and grass from watered meadows . . . . .	1,148,000 „	492,000 „
Roots and bulbs for fodder . . . . .	167,000 „	1,500 „
Hay from natural meadows . . . . .	525,000 „	544,000 „
Grass . . . . .	500,000 „	1,270,000 „
Wine . . . . .	7,700,000 gals.	15,400,000 gals.
Oil . . . . .	396,000 „	1,150,000 „
Agrumi . . . . .	1,370,000 fruit	2,311,000,000 fruit
Chestnuts . . . . .	72,000 tons	3,250 tons

The gross produce of an acre of wine-land is valued at £10, that of an orange garden under the best circumstances £57 10s., that of an olive plantation £20 8s., and that of a sumach plantation from £5 15s. to £6 16s. These numbers are, of course, very favourable ones. On the latifundia, of 875 acres, they are quite different. There the maximum crop brings in £7, the minimum £2 17s. 9d., and the average £4 12s. per acre without allowing for expenses, imposts, etc.

The returns vary according to the size of the holdings, increasing with their smallness. Estates in Tuscany give the following results, the size of the holdings being given between parentheses.

	Acres	£	s.	d.
Estate on a large scale . . . . .	(150)	1	0	5
„ „ „ medium „ . . . . .	(55)	2	1	0
„ „ „ small „ (Pescia) . . . . .	(12½)	7	9	0
„ „ „ „ „ (Arezzo) . . . . .	(18½)	8	14	2
„ „ „ „ „ medium . . . . .	(30)	5	9	2
„ „ „ „ „ small, unwatered (Pistoja) . . . . .	(15)	9	11	0
„ „ „ „ „ „ (Florence) . . . . .	(25)	5	17	6
„ „ „ „ „ large „ . . . . .	(75)	3	5	2

Here, as well as in the Marches and elsewhere in Central Italy, the actual net profit comes chiefly from cattle raising and pasture land, a circumstance that cannot indeed take place in Apulia, nor the Terra d'Otranto, nor Sicily, from the want of permanent green meadows, or the water supply necessary for them. At the same time, in most of the central and northern portions of the country, stall feeding enables the manure to be made use of in a far better manner than in the open meadowland of the farms in the neighbourhood of Rome, in Apulia, and in Central Sicily. By this means, and by irrigation when possible, the same field may bear two, or even three, crops in the course of a year.

## CROPS OF DIFFERENT YEARS

	1870-9	1890	1891
Wheat . . . . .	17,496,328 qrs.	15,922,552 qrs.	17,137,000 qrs.
Maize . . . . .	10,716,060 „	9,081,295 „	8,031,000 „
Oats . . . . .	2,308,563 „	2,302,810 „	2,409,000 „
Barley . . . . .	2,213,609 „	1,328,005 „	924,000 „
Rye . . . . .	„	536,230 „	555,000 „
Rice . . . . .	3,399,280 „	2,166,688 „	2,385,000 „
Beans, Lentils, Pease.	852,964 „	520,096 „	—
Barley, Beans, Beet .	1,163,055 „	1,335,070 „	—
Wine . . . . .	605,850,278 gals.	648,049,798 gals.	769,340,000 gals.
Olive oil . . . . .	73,108,640 „	67,895,278 „	58,014,000 „
Hemp . . . . .	1,896,225 cwt.	1,555,808 cwt.	1,316,000 cwt.
Flax . . . . .	461,556 „	410,969 „	—
Potatoes . . . . .	14,121,640 „	14,757,531 „	—
Chestnuts . . . . .	11,331,035 „	5,944,916 „	5,820,000 „

## 3. DOMESTIC ANIMALS

The raising of domestic animals has not reached a high stage in Italy, and it is only of late that improved breeds have been introduced. There are numerous varieties of horses, sheep, goats and pigs.

The Italian horse is small, graceful and capable of great endurance. These qualities are especially noticeable in the horse of Southern Italy, such as is raised in Naples and Sicily. He has to trot or gallop up hill and down hill and really succeeds in getting over long distances. His food is fresh grass, hay, couch-grass thrown out from the fields in ploughing or hoeing, and carob-beans. One variety, which is quite black, is bred in the Roman Campagna for the cardinals' carriages. Their manes and tails are not allowed to be docked. Other forms have been occasionally introduced, such as the percheron or the heavy Scotch horse, but the hard stone pavement has proved too destructive to their hoofs. Lucania, in the north of Tarentum, seems to have had a famous breed in ancient times, as the Tarentine riders were highly reputed, and one of them is represented on the coins as a symbol of the town. But for the most part the horse is only used for purposes of luxury.

Asses and mules, the characteristic animals of the country, do most of the heavy work. The mule (*mulo*) is held to be illtempered and spiteful, and it is well to look out, when one has to do with it, lest one should be unexpectedly bitten or kicked. The proverb says "Mulo, buon mulo ma cattiva bestia," or as it runs in Sicily "Di li muli guardatinni." Mules are employed for mountain guns, and are found especially useful wherever heavy loads have to be slowly dragged uphill. There are establishments for breeding mules in the Abruzzi, in Malta and elsewhere. Mules are even exported from these parts to foreign countries.

The ass is the beast of burden proper, and is indispensable in every household in country places. Sometimes it holds the position of a domestic pet, sometimes it has to endure cruel blows and has constantly to draw or carry heavy burdens, including the driver, if he is too lazy to walk, as well as the mealsack. The southern breeds are the finest, and it is really pretty to see them going at a rapid pace, when they are fresh, young and not yet overdriven. The frightful cry of the *ciucci* never ceases in Naples from morning to night. It is often heard several streets away, like the barking of a dog or the crowing of a cock.

The domestic cat is very common. Almost every family has its cat, but these are far more in a semi-savage state than those in Germany. The cat holds a prominent position in popular superstitions, and in many places the tip of the kitten's tail is chopped or bitten off, as the evil influence is supposed to be contained in it, so that in some places nearly all the cats are stump-tailed.

Sheep and goats are kept in large flocks, and in the mountains they often form the chief wealth of the inhabitants, supplying them with meat, wool and hides. Mutton or goats' flesh (*capretto*) is often the only meat to be had there. The shepherds are clad in sheepskins, which envelop the legs and feet. The goats furnish milk, as most of the peasants and farmers have not enough meadow land to feed a cow. Large flocks of goats are driven down twice a day into the city of Naples to be milked in sight of the customers. The goat has long hair and short horns like those bred in ancient times, such as are well represented on various bronzes, and the goat of to-day is descended directly from the ancient one without change. The sheep is of small size, with no special excellence either in wool or meat. The moufflon (*ovis musmon*) is still found in Sardinia and Corsica; it has horns bent into more than a semi-circle and reddish brown wool, approaching to black in the winter. They dwell in the mountains, wandering about in small groups over the heights where there is little cultivation, but they are rapidly becoming extinct.

The pig is still found wild in many places. Besides those in the royal

preserves of Astroni near Naples, and Casrine near Eboli, there are large droves in the crater of Monte Vulture and in the higher parts of the Apennines, where the young ones often become the prey of wolves. The damage done by wild boars is said to be by no means unimportant, and it forms one of the standing complaints of the peasants in the mountains. The domestic pig is smaller and more active than ours, which are bred for their fat. They never attain the weight or unwieldy shape of the German fattened hogs, partly indeed because they are allowed to be more in the open air and thus get more exercise. Their colour is often black, the bristles are short and far apart, and the *porci neri* have a somewhat strange appearance to a Northerner.

Among horned cattle the black variety prevails in the Southern Alps; it is pastured on green slopes and bred for its milk, the chief product being cheese. The populous towns of Northern Italy of course consume considerable quantities of milk, which is brought down by the small roads that lead up into the mountains. In other respects the milk industry is carried on in the Bergamo and South Tyrolean mountains as it is in Switzerland. The cowkeeper or his wife drives the herd to the lower mountain slopes in the spring, and to the higher ones when they are free from snow in the summer, descending step by step to the valley in autumn. Cowherds' huts and hay sheds mark these temporarily inhabited districts, where the cattle wander about without restraint. The cheese is prepared like Swiss cheese, which it resembles in every respect. Gorgonzola is a special kind, which takes its name from a town near Milan in the plain of Lombardy where cattle are bred. This rich, strongly smelling cheese is distinguished by the greenish streaks of mould due to a fungus which grows in the cheese and gives to it its peculiar flavour, while its spores cover the outer surface and redden it. Its manufacture depends on the flourishing of this fungus (*Penicillium glaucum*), and is therefore necessarily limited to autumn. Newly made mild kinds of this cheese are called "Strachino."

Lombardy, Piedmont, and the Southern Alps produce considerable quantities of butter, some of which is sent abroad; part of this, however, is made up for by importation from Austria. As yet it is only the Sorrentine peninsula which produces butter in Southern Italy. It supplies Naples and the neighbourhood. Dairies on a large scale, carried on by companies, (as in Germany and Scandinavia) to which the peasants and proprietors send their milk, were only introduced in Northern Italy a few years ago, and are quite wanting in the southern provinces. From the northern slope of the Apennines comes the *parmigiano* or parmesan cheese, which also requires care in the manufacture, as instead of being firm it may become soft and blister. This

kind of cheese, with other similar dry and hard cheeses, is used in preparing many kinds of food, but especially as a condiment with rice or macaroni, and as such has been spread over the whole of Europe. Allied to this are the "*Provolone*" and the "*Cacciacavallo*" which are made and eaten chiefly in Southern Italy. Most of the *cacciacavallo* is from the Basilicata; it is spindle-shaped, and rows of these spindles are hung up before the creameries as a sign of the goods sold. *Provolone* comes from Apulia and the Capitanata and is said to be made best in the dairies of Cerignola, Gravina and Bovino on the hills in front of the Apennines.



LONG-HORNED SILVER-GREY CATTLE OF THE ROMAN CAMPAGNA.

Cheese from sheep's milk is made in the whole of Central and Southern Italy. The numerous flocks of sheep on the mountain pastures supply the material. The product is as a rule of small value, and will not keep.

The large-horned silver-grey Italian cattle are native to Tuscany, the Roman Campagna, Apulia and the Capitanata. They have more stately forms than the German cattle and carry beautifully curved horns twenty inches in length and spotted with white. Large herds may be seen in the Campagna and near Foggia. Single animals are used as draught animals yoked to a plough or a cart, and a team of them look splendid, but it is difficult to find room for them in the narrow

roads through the ravines in the volcanic tufa. The horns are made into ornaments, drinking horns, etc.; the hide yields durable leather. On the other hand, the milk industry is limited to the Roman Campagna and the Maremme. These last, with their moist and mild climate, have winter pastures, while in summer the ground and vegetation are dried up. In autumn, if nourishment for the herds is scanty in the interior, but the grass is beginning to put forth again in the lower country after the first rains, the herdsmen drive their cattle from the mountains down to the coast, often a long way off, and here they are able to get through the bad time of year with their cattle. The heights of the Apennines of Liguria, Modena and Bologna are quite abandoned in the winter time and are only re-peopled at the commencement of summer. For then both pastures and cattle often suffer from drought and scarcity of water. In the same way the shepherds of the Apennines emigrate to Apulia in winter, and graze their sheep on the uncultivated stretches of the Tavoliere, returning home in spring.

The cattle of the Apennines have shorter horns and are smaller on an average (cf. illustrations, pp. 191 and 217). They pasture at large in the bush, where they tread numerous paths for themselves, generally returning to the villages in the evening. Most of the milk is used in the household to which they belong. Butter-making is almost non-existent. There is a peculiar custom in the towns of Southern Italy: instead of bringing the milk, they drive the cow, with her calf, before the house, and milk her in the presence of the customer. The purity of the milk is thus thought to be insured, but it does not prevent the milkman from adding water from a leather bottle secreted about his person. They have also some skill in producing so much froth that the glasses soon appear full. In this way of selling milk the quantity disposed of cannot be so considerable as in Germany, and besides, the demand for this article of diet is not the same. In Campania, where all the land is used for vegetable gardens, cornfields or vineyards, the animals, of course, have to be fed in stall. The long walks of the animals, taken twice a day, cause much of the nourishment to pass into muscle, and on the other side, much manure is lost which might otherwise be turned to account.

The warm swampy districts of the lower Sele valley, the low-lying Pontine marshes in Sardinia and near Catania, give congenial pasturage to the buffalo. There these animals stand or lie, up to the muzzle in water, to enjoy the coolness, or to get rid of troublesome flies. Their milk, coagulated and freed from whey, is sold in small round lumps under the name of *mozzarella*, or buffalo cheese.

Coagulated goats' milk — curd cheese (*ricotta*) — is another

favourite article of sale. It is packed in funnel-shaped baskets made of wickerwork, and used as a condiment with dishes that would otherwise be insipid. In order to send it to any distance, as is done, for instance, from the province of Avellino, it is salted.

The herds of oxen and buffaloes on wide areas, where the beasts graze at liberty, are tended by men on horseback provided with long lances. These often live for months among the herds in huts built of boughs and reeds, and grow more or less savage. The Campagnole of the environs of Rome, with their brown skin, their dirty torn garments, their legs swathed in linen, their rude sandals and large pointed felt hats, are indeed picturesque, and are often represented by painters, but are usually to be avoided as much as possible. They are accompanied in their work by savage, malicious dogs, which are often dangerous to harmless wayfarers on the Campagna. Horses, mules and asses are herded in a similar manner.

There were in Italy in—

	1881	1890
Horses, mules, asses . . . . .	1,400,000	2,000,000
Cattle . . . . .	4,700,000	5,000,000
Goats . . . . .	2,000,000	1,800,000
Sheep . . . . .	8,500,000	6,900,000
Figs . . . . .	3,800,000	1,800,000

The average gain from dairy produce in the years 1891-4 was—

	CWT.	VALUED AT
Cheese . . . . .	148,895,252	£3,414,817
Butter . . . . .	31,521,659	1,330,845
Curds . . . . .	23,827,619	194,942
Other dairy produce . . . . .	12,467,433	73,703

It will be seen that cheese takes by far the most important place, but that butter is relatively higher in price, while curds reach scarcely the fifth part of the latter. Whether the milk sold forms part of "other dairy produce" is not quite clear. It would be an abnormally small quantity considering its usually high price.

The figures for the export and import of butter and cheese, on an average of five years, are uncommonly instructive—

	IMPORTED		EXPORTED	
	Butter cwt.	Cheese cwt.	Butter cwt.	Cheese cwt.
1871-75	2,974	129,249	22,798	40,501
1876-80	3,423	139,996	41,267	46,238
1881-85	4,830	182,182	59,876	7,539
1886-90	7,657	195,854	61,026	103,267
1891-95	3,805	141,402	88,857	130,242

We may see from this table that there is an important exportation of butter, in spite of the limited area of production. It has been constantly rising since 1871, and increased by fully one-third during the nineties, the import falling by one-half during the same period.

There is no great difference in the values of exported and imported dairy produce. In 1891 the former was valued at £560,000, the latter at £712,000. Formerly a large part of the butter made in Italy went to Germany, but there is no longer a market for it there, owing to the increase in home production. Great Britain, with its large consumption and small home production, remains the chief market. There has also been a threefold increase in the export of cheese as compared with 1871, while the import still continues to exceed it, and has at times reached nearly 10,000 tons. The upward swing shown by Italian agriculture during the last ten years is due to the activity of the *Società agricole*, and to the establishment of joint-stock dairy farming.

The native supply of domestic animals is far from sufficient for the demand, and many more cattle are imported than are exported. It is only in the case of pigs that the opposite is the case, apparently because the poor fatten one or more swine and sell them as a bit of saving. The collective yield from domestic animals is estimated at £57,000,000.

Strings for musical instruments constitute another exported article. They are made in the Central Apennines. The Roman strings, as they are called, are renowned. They are used for violins, and fetch a high price. The towns where these articles are to be bought are Verona, Padua and Treviso in the north, and Naples in the south. The gut which is thus spun and intertwined is generally obtained from the goat.

The hides produced in the country do not correspond to the consumption, and in 1891 imported hides were valued at £1,756,000, against £812,000 exported.

Poultry and eggs are an important product of Italian agriculture. The small Italian fowl is an excellent layer, and has been introduced in different places in Germany, but it does not attain its full size and fecundity there, on account of the severity of the winter. Since the opening of the St. Gothard railway an important trade has sprung up with Germany, both in live poultry and eggs, the white of which is still indispensable in the preparation of many stuffs, especially calico. Fowls are met with all over Italy; even in the large towns people keep a few in hen-coops, or small gardens, in Naples frequently on the flat roofs. The artisans let their fowls run about the streets and in the evening take them into their rooms, where they are shut up in coops for the night. In the country everyone who is not absolutely

poor keeps a few fowls, as their eggs are essential in preparing food for fast days. A fowl is, consequently, no such special dainty, as it can be had everywhere without much cost, and it is often the only meat available and fit to eat in the outlying districts.

Besides fowls, they keep turkeys, and every family in Naples buys a young turkey cock before Christmas, which they fatten up for the festival. Whole flocks of these young birds are driven in from the country, where there are special places for breeding them, and offered for sale in the town. These turkeys are to be seen for a fortnight or three weeks tied up in the street beside the street doors all day long. The mild climate of the country is suitable for rearing turkeys, as the young birds are very sensitive to rain and cold during the first weeks of their lives, and from May onward neither is to be anticipated.

The turkey thus takes the place held by the goose in Germany. This latter bird is not very extensively kept, owing to the want of water, and to many it is almost unknown. It must have been more numerous formerly and must have been a common domestic fowl, as the Capitol was preserved by geese from the Gauls; and many statues, pictures, and other articles found at Pompeii give representations of this bird. After the introduction of the turkey it was slowly supplanted.

The exports of eggs in 1891 was valued at £912,000, of which £180,000 worth went to Germany. In addition to this comes poultry, of which 2,900,000 went to Germany alone in the same year.

Articles appear in the Italian papers regularly at the beginning of summer entitled "Bacheria." Under this name is understood the cultivation of the silkworm, which is widely extended on the Italian mainland. The silk spinner (*Bombyx mori*), called in Italian *verme* or *baco da seta*, silkworm, was introduced from China by way of the Levant, and in Lombardy, Tuscany and Campania has given rise to an extensive production of silk. The caterpillar lives on the leaves of the white mulberry, which is consequently much cultivated in the above districts, while the nourishment given by the black variety is far from being so good. The phosphoric acid and potash contained in the leaves seems to have a favourable influence on the caterpillars and their spinnerets. From these glands the silkworm draws forth the thread with its fore legs and head to weave its cocoon, the cradle for the chrysalis.

During growth the silkworm is very voracious, as it has to increase eight hundredfold from the time it is hatched, and every worm devours about 9 lbs. of leaves. This is why the mulberry trees have such a stunted, cropped appearance, as the creatures constantly require new and plentiful fodder. The yellow or yellowish white cocoons

(*bozzoli*), of the size of a pigeon's egg, consist of a thread some 1,000 yards in length, wound round in the shape of the figure 8; outside there is a coarse casing (floss-silk), then comes finer, and within that the working silk. The caterpillar inside is killed by hot steam or boiling water, with which, or with a solution of borax, the glutinous substance (silk-gum) which fastens the silk is dissolved, and the silk is wound off, several threads being drawn off at the same time (raw silk). As silk always fetches a high price, silkworm culture would be very profitable but for the epidemic diseases to which the silkworm is liable. At the beginning of the nineteenth century a grape mould (*Botrytis Bassiana*) called Muscardine or Calcino disease, made its appearance, in consequence of which the silkworms became inert, grew stiff and died, being finally covered with a coating of the mould. This epidemic seems to have been overcome by cleanliness and care; In its place an infectious disease caused by bacteria, *Nosema bombycis*, has shown itself. In this the fungus cells live in the red corpuscles (Cornalian corpuscles), and produce the disease called *gattine*. Only the most careful cleanliness and the immediate removal of all individuals who seem to be sickening or refusing their food is of any avail against this disease, as the spores are said to pass even into the eggs; and it too often happens that the silk master sees his laborious work brought to destruction by the death *en masse* of the worms.

Lecco, Como, Bergamo in Northern, San Leucio and Sorrento in Southern Italy are the chief places for silkworm rearing. The fine silk goes to the manufactory, and is made into the silken material prepared in Bergamo, Milan and Como. The floss-silk is spun into coarse thread, dyed and used in the manufacture of the coloured coverings, aprons and cloths which play so important a part in the costume of the people, but which have also had a lively sale abroad during the last twenty years, and form, besides, a favourite article for travellers in Italy to bring back with them.

The silk production amounted in 1880 to 2,750 tons, while France only produced 515 tons in the same period. Thus Italy was almost equal to Japan, with its 2,000 to 3,000 tons, and was only surpassed by China, whose yield was reckoned as 8,000 to 9,000 tons. Since then the yield has risen still higher. In 1890-91 there was an average of 3,800 tons of cocoons, and in 1892-93 there were 3,000 to 4,000 tons of raw silk, so that now Italy has surpassed Japan, in spite of an increase there of a thousand tons, and has caught up China, where the yield is only half of what it was.

A very considerable portion of the raw silk is exported to Switzerland and Germany (Krefeld) to be first spun and then woven. The white silks woven in Northern Italy, for which Milan is the peculiar

market, are famous. The value of exported raw silk in 1891 was over £10,720,000, and it can well be believed that seven-eighths of the manufactured article was exported. That sent to Germany was valued at £2,936,000. In addition, manufactured silk was sent abroad to the value of £512,000, so that nearly £12,000,000 was brought in by this branch of agricultural industry, and the newspapers are quite in the right to bestow special attention on the flourishing of the silk-worm.

#### 4. GAME AND FISH

Shooting is a leading pastime of the Italians. Rich and poor, old and young, shoot ; but, unfortunately, the animals to be used as game are falling off, and but for the annual return of the birds of passage, the people would have to shoot at their caps, like Tartarin de Tarascon. The right of shooting belongs to the owner of the soil, who can let his bit of ground or shoot over it himself, and can forbid others from making use of it in the same way. This is done by posting up notices (*Caccia riservata*) at the different ends of the property. On common land the people of the Commune, unless the shooting is otherwise disposed of, have the right of shooting ; and farmers and peasants, nay, even artizans, seldom walk in the country without a gun in order to bring down any game that may offer itself, so that well-to-do people have to be on their guard against the chance of being shot. There are also a few royal preserves, which are, of course, closed.

Stags are rare, and for the most part preserved ; and so are roes, which, with the fawns of the red deer, often become the prey of wolves. We have already spoken of wild boars and wolves. In the Alps there are chamois, and hares are hunted all over the country. It is said that the hare was first established in Sicily by Anaxilas, Tyrant of Rhegium, in 490 B.C., and a representation of a hare appears on the coins of Messina, as if it were a new animal. Birds are the principal game ; they are sometimes shot, sometimes caught in traps or with nets, and this has become such a passion that the life of no little bird is safe. If a herdsman has no gun, he will take a stone and try to bring down the songster that hops near him. Finches, larks, nightingales, robins, stonechats, and other small birds, to say nothing of thrushes, quails and doves, are subjected to this continual destruction.

It is pitiful to see these birds that we protect and cherish exposed for sale in the market a dozen at a time. These *uccelli* are considered special delicacies when roasted.

The forests and underwoods are silent, except for an occasional twitter, never really a song, and the birds shun human beings and seek out dense thickets. As there are no plantations and thickets

such as the little songsters love, in the lower hills of Lombardy, people have made some, and decoy into them the birds of passage who are seeking a temporary place of rest. But these bushes are set with numbers of baited traps, in which the birds are caught by the hundred. There is one cruel kind of trap which catches finches by the recoil of an elastic twig of hazel, breaking their legs, so that the poor things flap their wings for hours without dying. Then finches and thrushes whose eyes have been put out are set to decoy strange birds to be shot down. In everything that concerns killing and catching of birds the Italian is a cruel barbarian, and ridicules the German laws for the protection of birds, as their only use in his eyes is to be cooked.<sup>1</sup>

Pigeons also are taken in nets with the help of decoy birds, or flocks of tame pigeons raised expressly for the purpose fly up when a flock of wild ones approach ; or they are attracted by bright shining objects thrown down from a high place, and small shot is let off into the flock as they fly down. La Cava, near Salerno, and its neighbourhood are well known for the numbers of pigeons that pass through.

Quail shooting, which takes place in the spring and autumn months in the islands of the Tyrrhenian coast, resembles a regular butchery. At those times the cliffs on the north of Ischia, near Lacco and Forio, the rocks of Capri and the Lipari Islands are spread with nets like spiders' webs, and the quails, weary with their long flight over the water, fall into these in whole flocks. The early hours of the morning are the best, as the quails, like other birds of passage, travel by night, resting and feeding during the day. A large flight of quails will yield a thousand birds, but the sportsmen have often to return with empty bags. As the quail nets have to be very extensive, they generally belong to several people, who form a sort of company, and rent the right of taking quails, for this often brings in a good quantity of money if it is in any way successful.

Other ways of getting small birds are by rousing them from sleep and dazzling them with a bright light, and by setting birdlime. The different kinds of woodcock which are very frequently to be seen in Southern Italy in winter time are only shot. In sharp contrast to this destruction of useful insect-eating birds is the protection accorded to birds of prey, which, not being eatable, are not worth powder and shot, and this still further increases the decimation of singing birds.

It were greatly to be wished that a law for the protection of birds should be passed in Italy and strictly enforced ; but how could such a law be possible when everyone, representatives included, puts a high value on *uccelli* as tit-bits. All the efforts of German societies for the

<sup>1</sup> There is a treaty between Austria and Italy to prevent this slaughter of passing songsters, but it seems to be of no avail. (Trans.)

protection of birds and animals have hitherto been met by more or less courteous shrugs of the shoulder and by allusions to the extreme unpopularity of a law of the kind. Thus it remains as of old, Germans protect the birds that Italians may have plenty of them to eat.

Fishing is a very important factor in the nourishment of the people. It is carried on extensively, owing to the maritime position of the Italian mainland, its long coasts and numerous large and small islands, and affords the means of existence to a large percentage of the population. Fish, molluscs, crabs, and sea-urchins are exposed for sale in every market on the sea-coast, especially, of course, on fast-days and Fridays. Mussels are eaten in soup or macaroni, cuttle fish are fried, sea-urchins are eaten raw.

The fishing boats (*barche*) put out several together when fishing with floating nets, and have lateen sails hanging to the mast with a yard-arm, a legacy of antiquity which is represented in the same shape and position in the pictures in Pompeii. The fishermen in general are not such good seamen as those of the North Sea and the Baltic, as they have seldom to reckon with such violent winds and such sudden changes of weather, and their unserviceable sail does not allow of quick manœuvring of the boat. At the shore they fish with drag-nets, or ground nets, which are thrown out and slowly dragged in from the land, an arrangement that may be observed any day in Naples. The yield after hours of labour is often only a small quantity of anchovies. In consequence of the cost of the nets they generally belong, together with the boat, to a family, or a group, but occasionally to a single more wealthy individual who employs others for daily wages or for a share of the takings. In a boat with a crew of six men the profit is said to be divided into nine parts, one for the vessel, one and a half for the tackle, one and a half for the pilot, and one each for the other five fishermen. The white clothing of the men, their bare brown arms, the many-coloured caps on their heads, recur again and again, as if stereotyped, in pictures of Capri and Sorrento.

The tunny and different kinds of herring are important for the nourishment of the people. The tunny (*Orcynus thynnus*, Ital. *tonno*, Sicil. *tunnu*) comes near the shore in spring and follows the coast in large shoals. The capes of the sea-coast in Southern Italy and Sicily have small towers (*Tonnare*) on which a look-out is kept to note the approach of the fish, and the direction in which they are moving. A red flag gives notice of their approach, and all the people leap into the boats and try to cut off the retreat of the fish and to drive it with shouts and cries into the nets. Gigantic nets are spread out in suitable bays, and the tunnies, as soon as they reach the trap, are driven into smaller spaces and finally the whole shoal is drawn out, when a fearful slaughter

of the magnificent fish takes place. Steeped in oil the tunny keeps a long time and can bear a considerable journey packed in boxes. The tunny was represented on ancient coins as the symbol of Soluntum, near Palermo, and rightly so, as this is still a splendid place for tunny fishes. The Sardinian shore and the Ægatian Islands are also good places for taking the fish.

Another fish largely eaten by the people is the sardine (*Clupea pilchardus*, Ital. *sardella*), which is fried in oil or used to give flavour to otherwise insipid dishes. The sardine is olive green on the back with blue shining sides and white belly, and is one of the prettiest and brightest coloured of fishes. Its name appears to be taken from the plentiful shoals found off Sardinia. Almost as numerous is *Clupea euchrasicholus* (*Alice*, *Acciuga*, *Anciova*), the anchovy; it is eaten in the same way or packed in salt and oil. Sicily and Sardinia, Elba and the Lipari Isles yield great quantities of both kinds of herring and carry on an export trade in them. Much is consumed in the country itself. The anchovies are met with in fast-time, even in the Apennines, whither they are brought in as good a condition as may be and are readily bought, in spite of their by no means appetising appearance. Generally the best fast dishes to be had are herrings and cod imported from France or Norway. Dried cod especially (*baccala*) is widely used on account of its cheapness and the long time for which it keeps, and is a chief article of nourishment of the poorer classes. It is fried in oil or lard, and emits a penetrating and repulsive odour. It may be expected that many new railways leading from the coast to the interior will help the produce of the native fisheries to conquer this district, though the warmth acts in a contrary direction, ice being dear, and the price of transport in ice making the fish unattainable for the common people.

Fishing is for the most part confined to the coast. Deep-sea fishing is as yet little developed. It is only from Naples and Torre del Greco that flotillas set out every year for African waters to obtain turtles and corals. The vessels carry two low masts with either ordinary or lateen rigging, and are called goletta, felucca, or tartana, according to the build. They are small and are drawn up on the land during the period of rest. Noble coral grows in shallow places, where it is broken off and brought to the surface by divers or drag nets. The internal axis of the colony of polypes is of a colour ranging from blood-red to light flesh colour, and is the raw material for the manufacture of coral ornaments. The high price of the larger beads, which increases as the square of the diameter, is explained by the fact that thick pieces of uniform colour are only found in small number. The light coloured kinds are considered the finest, although this changes according to the

fashion. The pieces are sawn up, rounded, polished and pierced, according to their goodness, size and thickness, in the houses in the towns of the Gulf of Naples, in Genoa and Leghorn. The polishing is done with sand, several beads of the same diameter being finished off at the same time; in Genoa 6,000 men are said to be employed in this industry. Smaller beads cost scarcely a franc apiece, larger ones thirty francs, and the best and largest from 100 to 120 francs each, according to colour.

Bright coloured corals are a favourite ornament in Italy; the superstitious use them to guard them against the Evil Eye, and even gentlemen carry small polished bits of coral on their watchchains. Great quantities of imitations are made of red celluloid, which are difficult to distinguish from genuine coral. This is most easily done by careful heating. Tortoiseshell is imitated in the same way, with celluloid or with compressed collodion or horn.

The caret-turtle is a pelagic animal. Its horny plates of mail are loosened from the carapace with hot water and are cut with a knife into arrows for the hair, combs, etc. The better kinds are distinguished by transparency and deep dark markings. Unfortunately tortoiseshell is brittle, so that objects made of it must not be allowed to fall. A brisk trade in corals and tortoiseshell, chiefly of small value or spurious, is carried on by pedlars all through Italy, foreigners being the chief victims.

In company with these objects articles made of mother-of-pearl or shells are exposed for sale. The greater part of the material comes not from the Mediterranean, but from the Red Sea or the Indian Ocean. The shells of various univalves, especially *Cassis*, *Strombus*, and allied genera, are made use of, the thick upper layer being cut into a cameo which stands in white relief above the darker mother-of-pearl base. Many of these are of most delicate and artistic workmanship; the cutting requires great taste and skill, as the shells are all different in colouring, configuration and thickness, and must be treated in different ways. In this connexion we must say a word of the articles made of what is called lava. These are not of animal origin at all, being chiefly gypsum, with something added to make it harder, and are not cut, but moulded, and are certainly not worth the prices paid for them.

On the whole, however, a falling off is noticeable in coral and turtle fishing, chiefly owing to the exhaustion due to the continual plunder of the places where they are found, but partly also from the competition of the French, the glut of the market and the number of imitations. In 1891, 90,000 people, with some 19,000 boats, were employed in fishing, and the yield of the sea was valued at some £600,000.

On the other hand the coral fishery, with £2,480, is small to the point of vanishing, though in 1875 it amounted to £200,000, a full third of the whole. In spite of this the value of the coral industry, which was thus almost entirely the result of the work applied to the raw material, was registered in 1891 at £708,000, so that this industry is by no means approaching extinction. Italy gave to the foreigner £1,040,000 for dried cod and herrings in 1892, and in 1891 as much as £1,140,000. The improvement of native fisheries, chiefly indeed by extension of that in the deep sea and the ocean, is thus most earnestly to be wished for from the point of view of national economics. The control of the fishing is in the hands of the officer in command of the coast, which has been divided into eighteen wards (*compartimenti marittimi*) for this purpose. A sharp look-out is kept on the vessels going in and out, by the revenue officials, as smuggling is a very profitable business owing to the heavy customs duties.

## CHAPTER XII

### Commerce, Traffic and Manufactures

FOR centuries the chief trade of Europe was in the hands of the Italians, and they are thus in a certain measure the fathers of the commercial methods in use at the present time. We have already alluded in the foregoing chapters to the extensive trade with the Levant carried on by the people of Amalfi, Genoa, Pisa and Venice. Their factories were to be seen over the whole of the Black Sea, in the Grecian Archipelago, in Syria and in Egypt, and from these the goods of the Orient (silks, pearls, precious stones, articles of fine leather, ivory, etc.), were brought to Europe. They were then sent from Venice, travelling inland by the Valley of the Adige, over the Brenner pass and the Arlberg Valley and the lower passes, into the South German towns of Augsburg, Nuremberg, and Ratisbon, whose prosperity was most intimately bound up with that of the Italian trade with the Levant. Genoa supplied Western Europe and found a formidable rival first in Pisa and afterwards in Florence. Trade jealousy involved the Genoese in protracted feuds with the Venetians, who at the time of the Latin Empire closed the Bosphorus to Genoese ships, and thus cut off from trade the numerous factories in the south of Russia, until in 1261 Pera and Galata were reconquered by a Paleologus, Michael III., with the help of Genoa. At an earlier time the Venetians had destroyed the trade of Amalfi in a similar manner, and had forced the merchants of that town to pay tribute to St. Mark. Genoa and Pisa captured one another's ships, and on one occasion the whole of the Sardinian silver fleet belonging to Pisa was taken at once.

The most furious contest, however, was that between Pisa and Florence, in which the latter town after many vicissitudes was ultimately victorious, and thus raised itself to the position of a commercial power of the first rank. The Medici were originally wholesale merchants and bankers, and their branch establishments extended far into the north of Europe. They carried on a flourishing trade with Holland, England and the Hanseatic League. They had offices in Lübeck, in Bruges, and London, and besides the products of the soil of Italy and the East, they brought the science and art of the Renaissance to the North.

Since the thirteenth century the eyes of Italy had been attracted to Central Asia, where the Mongols had founded a gigantic empire. The journey of the Venetian Marco Polo, which lasted twenty-four

years (1271-1295), and extended as far as China and India. is well known. But before that several embassies had been sent to Tartary and Mongolia (Giovanni di Montecorvino, 1247-1328) with more or less success, and brisk commercial relations must have existed between Italy and Southern Russia and Bucharja, as a certain Pegolotti in Florence (1315-1317) issued a kind of traveller's guide for these countries (*Libro dei divisamenti dei paesi*). At a later time Italians took part in the discovery of the Western passage to India. Christopher Columbus came from Genoa, and in 1892 that city was proud to celebrate the four hundredth anniversary of the discovery of America. Another citizen of the same town, Amerigo Vespucci, unwittingly gave his name to the Continent in consequence of a mistake.

After the sixteenth century the trade of Italy was limited to the Mediterranean, but the coasts and islands of that sea fell more and more under Turkish rule, and were closed to trade. At the beginning of the nineteenth century travelling by sea had grievously fallen off and at the time of the Continental blockade this intercourse was entirely suppressed. The time of the Austrian rule, from 1815 to 1859, proved by no means favourable to trade, owing to the numerous internal duties at the boundaries of the small states, while smuggling flourished, as was natural. Only the harbours of Sardinia and Genoa enjoyed an increase of trade, which after 1859 gradually spread over the whole country. From the decline of the Ottoman Empire the Italians had again quietly regained the Orient as a market, and had won a commanding position among the merchants in Syria, Asia Minor, Egypt, Tunis and Tripolis. The *lingua franca* made it easier to accomplish this, and in the course of the decade many Italian schools were founded with the object of increasing their influence, several of them receiving support from the State.

This returning supremacy in the Levant has recently received a severe blow by the occupation of Egypt by the English, and still more by the French conquests in Algiers and Tunis. How deeply this last was felt by the country is shown by the way in which Italy has been turning away from France since 1881 and her nervous irritability in regard to everything connected with Tripoli, the only sphere of Italian influence as yet untouched.

Italy has also been taking her share in the trade of the world, all the more as thousands of her sons seek foreign countries every year. Lines of steamers go from Genoa and Naples direct to North and South America, as well as to the colonies lying in the Red Sea and Indian Ocean. As yet the shipping business to Africa and Eastern Asia has not entered into serious competition with the great mercantile powers. The trade with La Plata and Brazil is chiefly in the hands of the Joint

Stock Company called "La Veloce," with a capital of £500,000, with their chief office at Genoa. The Mediterranean shipping trade to Egypt, Syria and Constantinople, as well as that between the Italian harbours, is to a certain extent monopolized by the "Navigazione generale italiana" (formerly Florio e Rubattino), which enjoys a subsidy from the State and a reduction of harbour and tonnage dues for their mail steamers. For some years German mail packets have sailed to Italian harbours, to Naples for instance, and the Nord-deutsche Lloyd has established a direct line from Genoa to North America, while the French ships, since the trade and shipping report of 1888, have diminished in number, in fact have almost disappeared. At an earlier period the company of the "Messageries maritimes" had many steamers plying along the Italian coasts, and the most convenient way from the mainland to Sicily used to be by way of Marseilles to Palermo or Messina.

The coasts are supplied with sixty-two lighthouses, grouped in three divisions. Besides looking after the sea shore, hanging out weather signals and making meteorological observations, the officials stationed at the lighthouses have to make reports of earthquakes, tides and flights of birds, and to send telegraphic information about them as occasion requires.

The chief harbours are Genoa, Leghorn, Civitavecchia, Naples, Messina, Palermo, Catania, Tarentum, Ancona and Venice. Of these Genoa is by far the most important, as it possesses the whole of the transatlantic trade. It is the port of export and import for the flourishing industries of Piedmont, Liguria, and Lombardy. Then come Leghorn as the harbour for Tuscany, Naples for Southern Italy, Palermo for Sicily, and Venice for the Alpine countries and the eastern plain of the Po. Besides the Apulian coast towns, Bari and Barletta are also to be named as places of export for oil, wine, hemp, chestnuts and pulse. Brindisi, the ancient Brundisium, the chief point of departure for the Balkan peninsula in the time of the Roman Empire, is at present the terminus of the largest postal lines on the mainland, and is consequently visited by Austrian and English ships to take in passengers and mails for India. There are also steamers from Brindisi for Greece and Turkey.

There is a lively coasting trade carried on by sailing boats and small sailing vessels. Many of them carry the broad lateen sail and are difficult to manage. It is a sign of the independence from English influence on the part of Italian shipping that the vessels in use bear special names, such as brigantino, goletta, bombarda, trabaccolo, sciabecco, feluca, bilancella. A brigantino is a two-masted vessel with square sails and a bowsprit, a feluca has two masts with lateen sail

and foresail. a tartana has one mast with a large lateen sail, and so on.

Improvement of the harbours has followed upon increase of trade, Genoa has wide quays, docks and huge warehouses. The inner harbour of Naples, which had become too small, has been gradually enlarged since 1888, as the town itself has grown, and the same is true of Palermo, Tarentum and Venice. The harbours of Apulia, on the other hand, are badly constructed, and owing to the want of protecting promontories are becoming choked with sand, with which it seems almost impossible to contend. Brindisi, too, has a position which is unfavourable, especially in regard to healthiness, as pestilential vapours arise in summer time from the enclosed basins. Catania, again, and still more, the harbours of the south coast of Sicily, are little protected. It is only at an enormous cost and by making use of the ruins of ancient temples that a dam has been constructed at Porto Empedocle, which gives some kind of security from the south winds and the waves. Most of the small places along the coast have only a roadstead or a harbour for fishing boats, into which smacks, felucas, and other sailing ships of small draught can enter, but not large steamers. The west coast with its numerous bays, affords, it is true, anchorages sufficiently protected by its protruding cliffs, if need for anchoring should arise. The circumstances of the east coast are unfavourable, because the flat sandy strand forces vessels to remain quite unprotected at a distance from the land. The traffic on the coast between ports of second or third rank is carried on, if it exists at all, or does not take place by land, in sailing boats, and only to a small amount by steamers. Regular communication exists, of course, for postal purposes between the mainland and the islands, every day between Naples and Sicily, once a week from Palermo and the Lipari Isles. Once in the week, too, the steamers of the "Navigazione generale" sail to Sardinia from Leghorn, Civitavecchia, Genoa, or Naples and Palermo.

The Italian mercantile marine consisted of

	1895	
Sailing vessels . . . . .	6,231	561,398 tons
Steamers . . . . .	328	203,824 „
	1896	
Sailing vessels . . . . .	6,166	545,848 „
Steamers . . . . .	345	216,570 „

From this it follows that there are sailing ships in considerable numbers engaged in coasting operations, and that the steamers are far behind those of Germany, England, and France, and this corresponds to the

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small number of transatlantic vessels. In spite of this we may notice a slow diminution in the sailing ships and a corresponding increase in steamers, the following being the corresponding numbers for 1886 and 1887—

	1886	
Sailing vessels . . . . .	7,111	814,019 tons
Steamers . . . . .	225	122,375 „
	1887	
Sailing vessels . . . . .	6,992	787,040 „
Steamers . . . . .	237	141,751 „

It is true that the total tonnage has fallen during the nineties, and even to the extent of 200,000 tons, a sign that trade is suffering under existing economic conditions. The totals of the ships entering and leaving for long voyages, or voyages along the coast, under native or foreign flags, are given in the two following tables for 1886 and 1896—

We gather from these tables of comparison that the number of vessels entering and leaving the harbours does not vary much, but that the tonnage has increased by about fifty per cent., and that no small part of this increase is under foreign flags, for among the steamers that enter port those from abroad have five times the capacity of those of Italy.

The railways, too, have increased the trade with the Alpine countries in an extraordinary manner since the completion of the network of lines, and especially since the construction of the Alpine railways over the Mont Cenis, Mont St. Gothard, Brenner, and Fella passes.

# SHIPPING TRADE IN THE YEARS 1886 AND 1896.

VESSELS	ENTER NUMBER		CARRYING CARGO		STEAMERS	
	Vessels	Tonnage	Vessels	Tonnage	Number	Tonnage
<b>(a) Incoming vessels</b>						
<b>(a) Sea-going vessels</b>						
Under the Italian flag	9,324	1,470,271	7,872	1,272,796	683	775,386
	8,874	2,039,144	6,926	1,831,179	1,546	1,512,310
Under foreign flags	6,744	4,527,447	5,798	3,973,894	4,594	4,187,019
	6,554	6,202,010	5,879	5,800,921	5,226	6,056,612
Totals	16,068	5,997,718	13,670	5,246,690	5,577	4,962,405
	15,428	8,241,163	12,805	7,632,100	6,772	7,568,922
<b>(b) Coasting vessels</b>						
<b>(a) Under the Italian flag</b>						
	88,868	9,327,508	61,801	7,166,193	17,917	7,008,441
	80,934	13,056,181	58,706	11,960,579	23,144	11,750,189
Under foreign flags	3,606	3,002,810	2,597	2,245,952	3,254	2,921,836
	4,253	4,118,589	3,555	3,443,660	4,024	4,072,636
Total	92,504	12,330,318	64,398	9,412,145	21,171	9,930,277
	85,187	18,074,770	62,261	15,413,539	27,168	15,822,825
<b>Incoming vessels: total</b>						
	108,572	15,328,036	78,068	14,658,835	26,748	14,892,672
	100,615	26,315,933	75,066	23,045,639	33,940	23,391,747
<b>Outgoing vessels</b>						
<b>(a) Sea going vessels</b>						
	15,822	6,022,839	9,435	3,512,087	5,606	4,082,227
	15,597	8,460,457	11,106	5,686,460	6,970	7,700,828
Coasting vessels	92,379	12,974,685	61,739	9,169,977	21,008	9,746,364
	84,561	17,741,104	60,903	14,789,224	26,921	15,533,137
Total	108,201	18,097,524	71,174	12,709,664	26,614	14,728,591
	100,158	26,201,561	71,109	20,475,684	33,891	23,323,695

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The total value of imports and exports for 1870 and some of the subsequent years are—

IMPORTS		EXPORTS	
1870	£35,832,000	£30,252,000	
1880	49,024,000	45,292,000	
1881	53,280,000	48,692,000	
1882	53,800,000	46,232,000	
1883	55,212,000	47,996,000	
1884	53,732,000	43,856,000	
1885	63,008,000	53,372,000	

IMPORTS		EXPORTS	
1886	£54,772,000	£35,956,000	
1890	55,088,000	38,464,000	
1891	36,364,000	28,392,000	
1894	35,464,000	38,596,000	
1895	47,864,000	42,320,000	
1896	47,340,000	42,880,000	

The marked decrease towards the middle of the eighties was due to the abrogation of the commercial treaty with France and the diminished markets on the southern edge of the Mediterranean. It is not till 1895 that the numbers begin to rise again and approach the trade at the beginning of the previous decade. With temporary exceptions, the value of the imports always exceeds that of the exports, so that Italy has ordinarily to pay over money to the foreigner. The greater export of the noble metals has fluctuated in the last decade between £560,000 and £360,000, a consequence of the unhealthy financial position and the loans taken up abroad. The transit trade amounted to £3,960,000 in 1870, £4,680,000 in 1880, £28,000,000 in 1885, £24,400,000 in 1890, and £35,200,000 in 1895.

The principal countries with which trade is carried on are England, Germany, France, Austria-Hungary, Russia, and North America. France still held the first position in 1886, the import thence being £13,864,000, and the export £16,660,000, together £30,530,000. Since that time, for the reasons we have given, this has greatly changed, and in 1896 the amount was only £11,480,000 (£5,348,000 imports, £6,124,000 exports). This led to the development of the German market, and caused it to surpass that of France. The numbers in 1886 were £5,172,000 and £4,324,000, and in 1876 £5,792,000 and £6,400,000, together £12,192,000. In the case of both these countries the exports exceed the imports, while the contrary is the case with England, as Italy takes coal and woven goods from that country and the value of these cannot equal her own goods in value. This has been so at all times, with some fluctuations it is true in different years. In 1896 England sent goods to the value of £9,169,000, and received goods to the value of £4,384,000, while in 1886 the numbers were £11,004,000 and £2,848,000. The relation of the several countries in regard to exports and imports from and to Italy is shown in the following table—

	Imports	Exports
	£	£
England . . . . .	9,196,000	4,394,000
The Netherlands . . . . .	236,000	48,000
Belgium . . . . .	1,116,000	744,000
France . . . . .	5,348,000	6,124,000
Switzerland . . . . .	1,788,000	6,812,000
Austria-Hungary . . . . .	5,252,000	4,856,000
Germany . . . . .	5,792,000	6,400,000
Russia . . . . .	4,752,000	512,000
Sweden and Norway . . . . .	296,000	168,000
Roumania . . . . .	800,000	52,000
European Turkey . . . . .	904,000	660,000
Greece . . . . .	156,000	236,000
Malta . . . . .	24,000	356,000
Spain . . . . .	380,000	516,000
The rest of Europe . . . . .	124,000	256,000
Asiatic Turkey . . . . .	156,000	144,000
British India . . . . .	2,668,000	1,020,000
The rest of Asia . . . . .	702,000	60,000
Egypt . . . . .	220,000	568,000
The rest of Africa . . . . .	360,000	576,000
United States and Canada . . . . .	4,864,000	3,460,000
Brazil . . . . .	200,000	540,000
Argentina . . . . .	1,096,000	2,296,000
The rest of America . . . . .	416,000	792,000
Australia . . . . .	92,000	104,000
	46,928,000	42,084,000

These values of course refer to goods of very different kinds. Coals, grain and cotton come first among the imports. The home production is far from sufficient to cover the demand for coal, which is brought chiefly from England, and next to that from Germany. Cotton comes from America and India, and serves as the raw material for the budding textile industry. Raw silk also is imported from Asia and is spun, and also in many cases woven in the interior. The native supply too of hides, cattle, wood, wool, fish, tobacco and sugar is far from sufficient, and thus hides are brought from America, wood from Scandinavia, wool from Australia and England, fish from France, petroleum from Russia and America. Petroleum, however, plays a far less important part as an article of importation than it does in Germany, where it was imported to the value of £2,980,000 in 1896, while owing to its wealth in oil Italy used only £480,000 worth in the same year.

On the other hand, silk and silken goods come first among exports, then oil, wine, oranges and lemons, straw goods, eggs, sulphur, marble, rice and tartar. Fowls and eggs, as well as flowers and vegetables, go chiefly to the countries of Central Europe. Oil and oranges and

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lemons are divided between our continent and North America. Sulphur and marble make their way all over the world, as well as coral and silk, of which latter Germany takes a considerable portion for its Rhenish industry. Not less than £5,790,000 worth was imported into Germany in 1896, of which somewhat more than half came from Italy.

The following list gives the amount of import and export of the different articles in the year 1896—

## IMPORTS

Corn . . . . .	£5,480,000	Fish . . . . .	£1,172,000
Cotton . . . . .	4,516,000	Coffee . . . . .	1,108,000
Silk . . . . .	3,660,000	Colours . . . . .	1,110,000
Coals . . . . .	3,428,000	Tobacco . . . . .	900,000
Hides . . . . .	1,940,000	Silk stuffs . . . . .	872,000
Iron . . . . .	1,776,000	Sugar . . . . .	832,000
Machines . . . . .	1,472,000	Seeds . . . . .	704,000
Cattle . . . . .	1,400,000	Ornaments and pre- cious stones . . . . .	688,000
Wood . . . . .	1,380,000	Calico . . . . .	664,000
Chemicals . . . . .	1,368,000	Petroleum . . . . .	476,000
Wool . . . . .	1,276,000	Linen yarn . . . . .	440,000
Cloth . . . . .	1,188,000		

## EXPORTS

Silk . . . . .	£11,548,000	Hides . . . . .	£844,000
Olive oil . . . . .	2,196,000	Cattle . . . . .	840,000
Wine . . . . .	2,060,000	Almonds . . . . .	828,000
Wood and strawwares	1,880,000	Marble and alabaster	584,000
Hemp . . . . .	1,496,000	Tartar . . . . .	560,000
Oranges and lemons	1,324,000	Colours . . . . .	559,000
Silk stuffs . . . . .	1,324,000	Cheese . . . . .	496,000
Eggs . . . . .	1,160,000	Fowls . . . . .	484,000
Coral . . . . .	1,104,000	Rice . . . . .	432,000
Sulphur . . . . .	1,092,000	Butter . . . . .	424,000
Cotton goods . . . . .	1,016,000	Zinc . . . . .	380,000
Fruits . . . . .	936,000		

(other than almonds, oranges and lemons)

The accompanying figures taken from the returns of the respective countries serve to check the Italian figures. They give the value of the goods exported to and from these countries.

	IMPORTS	EXPORTS
Germany (1895) . . . . .	146.0	83.4 Mill. marks
France (1896) . . . . .	126.9	115.2 Mill. francs
Austria-Hungary (1896) . . . . .	62.3	60.1 Mill. gulden
Russia (1894) . . . . .	14.5	26.9 Mill. roubles
Great Britain (1895) . . . . .	3.1	5.5 Mill. £ sterling
Sweden and Norway (1896) . . . . .	1.4	2.5 Mill. kronen
The Netherlands (1896) . . . . .	5.1	6.2 Mill. gulden
North America, U.S. (1896) . . . . .	20.8	19.9 Mill. dollars

From these figures it comes out very clearly that the products of Great Britain and Russia have an advantage,<sup>1</sup> while Germany and

<sup>1</sup> Apparently the author still holds to the exploded Mercantile system. (Trans.)

France pay an excess on their goods, and in the other countries the give and take nearly balances one another.

Manufactures are only beginning to develop in Italy, if we neglect those connected with agriculture. They are completely wanting in Sardinia and the central portion of the Apennines, and they are on a small scale in Sicily and the few larger towns, and have their principal seat in Piedmont, Liguria, Lombardy and Venice, as well as Southern Campania. The causes for the success in industrial undertakings of Northern Italy are to be sought in the water power at their disposal, and in the enterprise of the higher and the industry of the lower classes, in the support of the Sardinian Government and the beneficent stimulating influence of Switzerland. Natives of Switzerland and Southern France educated at Lyons were partly introduced, partly permitted to come into the country, for the purpose of starting spinning mills and weaving mills, and they are still constantly emigrating thither, so that numerous firms are in the hands of foreigners or their successors. In the same way the water power and industry at Nocera in Campania, at Salerno, and in the valley of the Irno have been made useful by foreigners, who have founded many factories in those places as well.

Silk spinning, if only in consideration of its enormous export (£9,120,000), takes the highest place; the central points are Milan, Genoa, Florence and Caserta. In the province of Florence alone there are thirty-four firms with 1,341 workmen employed in silk raising and silk spinning. In Terrano raw silk was obtained to the value of £20,000. Silk thread, as well as ready made silk stuff, is made, the chief market for which is Milan. In this manufacture and in silkworm raising women and children are employed, and indeed silkworm raising is typically a domestic industry.

Wool and cotton factories are also very important. As the native production of wool is insufficient, large quantities have to be imported every year from abroad (partly from Australia), and the numbers for the export of wool are as follows—

	Import	Export
1890	8,076 tons	1,307 tons
1891	8,830 „	1,257 „
1892	9,607 „	2,234 „
1893	8,739 „	1,758 „
1894	9,234 „	3,030 „

So that on an average there is an excess of import over export of 6,000 to 7,000 tons. In 1894 over 9,000 workmen were employed, and the value of the wool when manufactured rose from £1,721,504 in 1884 to £2,949,632 in 1894, a proof that this branch of industry has grown in

a remarkable manner. Novara stands at the head of all the provinces with 59 firms, 2,398 looms, and 70,000 spindles in combined spinning and weaving mills. Mills employed in weaving only (tessiture) are found especially in Piedmont (17 firms), and Lombardy (25), spinning mills (filature) in Tuscany (44), besides those in the districts named (29 and 12 respectively). These factories are distributed as follows, according to their characters—

	Factories	Workmen	Spindles	Looms
1. Wool-cleaning . . . . .	10	201		
2. Wool-carding . . . . .	35	927		
3. Spinning . . . . .	149	4,219	128,460	
4. Weaving . . . . .	103	4,968		1,276
5. Spinning and weaving . . . . .	192	30,310	217,081	5,211

The climate of Italy is on the whole mild, but is nevertheless occasionally severe in winter, and is subject to violent changes of temperature. For this reason people wear a good deal of warm clothing as a protection against taking cold, and thus remove the chief cause of attacks of fever. The thick cloths used in the mountains and in country places are almost without exception woven in the homes. In 1894, 18,484 of the small looms were going, 4,388 of which were in the one province of Cagliari, 1,611 in Aquila, 989 in Bologna, 811 in Chieti, 735 in Bergamo, 610 in Volenza, 656 in Campobasso. On the other hand, there are hardly any in the north, where goods from the factories can be bought cheap, Verona having only 7 house looms, and Pavia and Venice none at all. These numbers are limited to the manufacture of woollen goods, otherwise they would have been very much larger, many looms being employed on cotton, hemp or linen. Thus of 7,619 looms in the province of Teramo, 1,557 were exclusively for cotton and 5,076 were adapted to various materials.

The spinning and weaving factories at Nocera, Scafati, Sarno and Salerno, in Campania, at Avellino in the Irno valley, and at Piedimonte in the Apennines, are principally employed on cotton, which is imported from North America, and landed at Naples, Salerno, or Castellamare. The following table gives the import and export of cotton in tons—

	Import	Export		Import	Export
1887	37,446	6,453	1891	45,538	8,990
1888	36,862	6,536	1892	47,931	9,023
1889	44,164	7,796	1893	48,531	8,557
1890	50,009	8,944	1894	58,824	7,457

The material remains partly in the country, but some goes abroad, as the low price of labour makes the export remunerative. The provinces on the northern boundary of the Apennines, from Bologna to Alessandria, have numerous cotton factories, not less than 209 of these

being in the province of Piacenza. During the last ten years between 15,000 and 20,000 tons of cotton have been worked up in 100 to 120 looms, and 1,300,000 spindles, a number which has almost trebled itself since 1870. This industry is increasing in spite of the cheap cottons imported from Germany (Alsace), and since 1894 the export of yarn and cotton cloth has exceeded the import.

Hemp and flax are spun partly in factories, partly on spinning wheels, which are to be found all over the country. In 1894 there were 310 large factories for the weaving of hemp and flax in the province of Piacenza, and 2,881 looms were worked in the province of Teramo on these materials alone. The inhabitants of the Basilicata make a good deal of rope, string and matting, exporting them by the ports of Apulia. The importance of this branch of industry may be seen from the fact that in the seventies about half a million persons were engaged in the cultivation and manufacture of hemp, and since then this number has rather increased than diminished.

Raw jute is purchased abroad in large quantities (8,308 tons in 1893, 7,298 in 1894), but against this nearly 20,000 tons of hemp and flax are produced, and considerably more of these textile manufactures have been exported.

Straw plaiting is a special industry of Italy. Articles made of straw are to be distinguished from those made of willow-bast, but both give employment and sustenance to many thousands of people. The centre for *cappelli di truciolo o di paglia* (chip or straw hats) is the province of Modena, where the chip is cut from the withes and plaited. This process, discovered by Niccolo Biondo, has been practised for some 400 years. Women and children make use of it as an easy means of earning money, and even six-year-old children work at it. Every plait (*treccia*) is from 40 to 44 yards in length, and costs from 4½*d.* to 9*d.*, according to quality, so that a workman can gain 1*s.* 3*d.*, a woman 10*d.*, and a child 3*d.* a day. The material is of course obtained and the plaits are made in summer, and the number of hands employed in Modena during the six months amounts to some 11,000. Straw which is also used for hats and baskets, is grown in Tuscany.

Florence has been the centre of production and of export since ancient times. 21,300 hands, 20,000 of whom are women, are employed on plaiting and hat making. The value of the manufactured article amounts to from £600,000 to £800,000 a year on an average. In 1893 and in 1894 nearly 5,500 tons of plaits for hat-making were produced, and 4,300,000 and 4,800,000 straw hats were made in the two years respectively. These hats, as well as the plaited work of Modena, make their way to America, Germany, France, and England, under the name of Italian straw hats and straw goods, and are of the

highest importance to the prosperity of the country. Straw industry has even been planted in the districts devastated by earthquakes, where there is occasionally great want of profitable work, as at Ischia for example, but it has not become so naturalized there as in Tuscany, Umbria and the Emilia.

The trades connected with sulphur and salt, fish and coral have been treated above. There are not many iron foundries or smelting furnaces. What there are are chiefly at Genoa, Leghorn and Spezia, where the iron is used for making machines and for shipbuilding. In the south of the country only Naples and its suburbs are worthy of any mention in this regard. There are numerous smithies in the lower valleys of the Alps, where the manufacture of weapons, daggers, swords and knives has been carried on since ancient times in the Val Trompia and Brescia. Blades of different kinds are also made at Campobasso near Beneventum. A cannon foundry has been set up in Terni for the State. Among other metal wares the wrought iron work of Venice, candlesticks, lanterns, lamps, mirror frames, etc., formed of iron ribbon are famous, and display artistic taste. The most important shipbuilding yards are those of Orlando at Leghorn and Armstrong at Pozzuoli.

Chemicals are not manufactured in any large quantity in Italy, as German and English goods completely rule the market of the world. And besides this, qualified and well educated chemists are not to be found in the country. The number of what are called chemical laboratories, that is of pyrotechnic factories, is considerable. Fireworks of all kinds constitute a favourite amusement at every festival, and large quantities of gunpowder are burned in the pursuit of game or for pleasure. Then a few factories are engaged in the manufacture of soda, with the help of the cheap sea-salt and limestone, others produce sulphate of copper and flowers of sulphur to destroy the fungus on the vines, and lastly the coal tar and the ammonia water from the gas works are turned to account in the colour industry which is now commencing. Genoa, Leghorn, Rome and Naples are naturally the centres of production of these articles, and Orbetello has a factory for soda in consequence of the saline springs in its neighbourhood. In Sicily and Sardinia, as well as in Calabria, Apulia, and the Basilicata, chemical works in the proper sense are entirely wanting.

The excellent clays which are found in almost the whole country have given rise to brick-kilns and potteries at many points. Greeks, Romans and Etruscans made extensive use of these treasures of the ground in ancient times, as we learn from the innumerable vessels and fragments still in existence. Among brick-kilns, those of Rome, on the Monte Vaticano and the Monte Mario, take the first place. The

principal part of Modern Rome is constructed of brick, and the 2,000 to 3,000 brickmakers form a troublesome element in the population of Rome. The value of the clay burned there may be put down at from £40,000 to £80,000 a year during the last decade. The districts of Siena, Florence (£40,000), and Bologna are also seats of brickmaking, and in the province of Teramo, which has but a small demand for such things, £20,000 was received for roof tiles and similar articles in the year 1894. Fayence, a kind of earthenware very widely distributed, is said to be named after the little town of Faenza, where even at the present day similar articles are made of the pliocene clay, which is impregnated with fine sand. Many of the clays are suitable for majolica, the manufacture of which flourished at the time of the Renaissance and at the Barocco period, and is still carried on in some districts, as on the northern edge of the Etruscan Apennines, in the district of Modena and Parma, and also at Sesto Fiorentino in Tuscany, where majolica, porcelain and earthenware to the value of £80,000 are shaped, coloured and burned, employing 1,520 workmen. The inhabitants of the Valley of La Cava and Vietri near Salerno carry on a brisk manufacture of earthenware made from common clay rudely stained of various colours, and the same holds of several places in Sicily.

Glass works have long been a speciality of Tuscany, whence comes a great part of the thin flask-shaped bottles bound round with straw. The towns of Empoli, Montelupo, Castel Fiorentino, and Florence itself share in this industry, which brings in some £10,000 in each case. In Venice all kinds of coloured glass are prepared and shaped artistically into plates, baskets, etc., or glass beads. Murano, an island with a town of the same name, lying to the north of Venice, has been the chief seat of this manufacture ever since 1289, when it was brought thither from Byzantium. The glass works which supplied the Church of St. Mark and the old patrician houses with the magnificent coloured chandeliers, vases, goblets and mirror frames, have of late received a new lease of life after temporary decline, by reviving the old methods and adopting numerous new modes of colouring, and have thus rendered possible the restoration of the mosaics inside the churches and on their outer walls, as in the case of the Cathedral of Orvieto. These mosaic works are gradually becoming known all through Europe, and are now sending a good deal of work abroad.

From a report in the eighties, there was an export of glass beads to the value of £312,000, of which £80,000 worth went to India and some £20,000 worth to Germany and Scandinavia.

Goldsmith's work is another business that enjoys international favour. Rome, Florence and Venice are the best known places for it, and gold work is often united with mosaic. In Florence they use

fragments of precious or ornamental stones of forms to suit the object to be constructed, and work these up into a whole, and thus of few parts, while the more laborious but simpler Roman mosaic is composed of numerous small cubes of different colours. Filigree work, especially in silver, less often in gold thread, is looked upon as a speciality of Venice and Genoa, and displays high art and delicate taste.

Genoa and Naples also produce coral work, pearl ornaments and tortoiseshell articles, all three of which, it is true, are subject to many clever imitations. As chains of beads are in demand, the manufactories of Rome and Venice turn out glass and wax beads by thousands, and supply the people with a cheap and agreeable ornament. The women of the lower classes also adorn themselves excessively with tinsel rings, earrings and brooches, so that the goldsmith's art is largely represented all over Italy, and brings in good profit. Since 1896, however, ornaments and precious stones have been imported from abroad to the value of £712,000.

The pedlar's trade is a striking phenomenon in many places. In the town of Praiano, on the Sorrentine peninsula, only women, children, and old men are generally to be seen in the streets. The young fellows and the men are walking through the whole country, offering all possible objects for sale, but they return home at an appointed time. It is the same in general in towns in the Basilicata and the Modena Apennines.

If we pass now to those businesses which stand in close connexion with agriculture, we must mention first the sugar refineries in Genoa and Leghorn, which use, to be sure, relatively little of native material, chiefly foreign raw sugar or imported molasses. Sugar is subject to a very high duty, from £2 17s. *od.* to £3 4s. *od.* per ton, according to quality, and is thus distinctly a luxury and not an article of diet for the people. A good deal of olive oil is used in the preparation of soap. Venetian soap, for instance, is well known; it is made with olive oil and the natron is derived from sea salt. Leghorn, Bari and Amalfi also produce this article.

Spirits are made of the husks of different kinds of grape and of corn, but this industry is but little developed in consequence of the small demand in competition with wine, and of the enormous duty.

On the other hand, the preparation of paste (*paste da minestra*, *maccheroni*) flourishes everywhere; it is at the same time an important article of diet, and is exported to the whole world. In the province of Florence 142 firms carry on this business, producing 5,023 tons in 1894, in that of Caltanissetta, in Sicily, they number 220 with 5,446 tons. Even Chieti has 229 establishments with 3,044 tons. The best macaroni and vermicelli, however, comes from the Neapolitan towns

of Torre Annunziata, Gragnano and Sorrento, where in fine weather the paste may be seen spread out to dry on the flat roofs or hung up on sticks along the streets and in the courtyards. Gragnano, Sarno, Nola and Casteltermini, in Sicily, are of some importance in this branch of trade, and an endless train of carts with high towers may be seen coming into Gragnano with macaroni packed for export in light wooden boxes on the way to the station or direct to Naples. As machines are required for grinding the corn and also for mixing and working the dough on a large scale, they make use of water power by preference where it is available ; in Sicily they are obliged to use human labour ; in Sardinia they employ asses when they have not introduced steam power. Women and children are employed in drying, cutting and packing the macaroni, their labour being cheaper than that of men.

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## CHAPTER XIII

### Political Institutions

THE Italy of to-day is a kingdom, one of the recognized Great Powers of Europe, with 112,000 square miles and 31½ millions of people. It encloses the small republic of San Marino, which exists under the protection of Italy and is surrounded by the royal domains.

#### I

#### CONSTITUTION AND GOVERNMENT

Umberto I<sup>1</sup> is the ruling sovereign. He was born on March 1, 1844, and is the eldest son of Vittorio Emanuele, the founder of the kingdom. He ascended the throne on January 9, 1878, and bears the title of *Re d' Italia per la grazia di Dio e la volontà del popolo*. The constitutional form of government is expressed even in this designation, which places the will of the people side by side with the Grace of God. The title is at the same time a reminder that in October, 1860, the provinces liberated from the yoke of the foreigner summoned the King of Sardinia to the throne of Italy by popular election. The kingdom descends to the heirs male of the house of Savoy, and the present Crown Prince,<sup>2</sup> Vittorio Emanuele III, only son of Umberto and Margherita, a princess of Savoy, who was born at Naples on November 11, 1869, holds the title of Principe di Napoli.

The arms of the country are a white cross on a field gules surmounted by a Royal Crown or, and encompassed by the Chain of the Order of the Annunciation. Three flags are introduced as an ornament on either side of the coat of arms, and over it is the star of Savoy. The national flag is green, white and red, in vertical stripes, the green being next the flag-staff.

The king has the right of declaring war and concluding peace. He holds supreme command by land and sea, appoints the ministers, who are, however, selected from the representatives of the people, names the officials, promulgates the laws, coins money with his own effigy, bestows honours, possesses the right of pardon, summons the House of Representatives, and dissolves it when occasion requires. Treaties with foreign powers, especially treaties of commerce and navigation, require the consent of the representatives of the people. The king, however,

<sup>1</sup> He was assassinated July 29, 1900.

<sup>2</sup> Now King Vittorio Emanuel III.

is irresponsible, being covered in all State affairs by the Ministers, whose countersignature is required to give validity to royal decrees.

The popular representation consists of two chambers, the Senate and the Chamber of Deputies, which stand on an equal footing and together constitute the Parliament. The Senate corresponds to the German Upper House, and has not a definite number of members. Any Italian over forty years of age may be a Senator if he belongs to



THE LATE KING UMBERTO I, KING OF ITALY.

one of twenty-one specified categories, e.g. any one who has been a deputy, any one who is a distinguished scientific man, a great artist, a high State official, a bishop, one who has done any great service to the State or has paid more than £120 in direct taxes for three years running. Of each category, however, not more than a certain percentage can be represented in the Senate, and the nomination by the King is subject to revision by a Commission appointed for the purpose. Besides these,

princes of the blood have seats in this body at twenty-one and votes at twenty-five years of age. The Senate is the highest court of justice in cases of high treason, political offences and the impeachment of Ministers. As compared with the Chamber of Deputies, which is continually changing, it forms the conservative, balancing element in the constitution, and though it is not of equal importance with the second chamber, its consent is necessary to render a law valid.



QUEEN MARGHERITA.

The Chamber of Deputies is chosen every five years by direct ballot in electoral colleges, one representative being allotted to every 57,000 inhabitants. The total number of members is 508; they must be over 30 years of age, and of good character. Every citizen possesses the franchise who can read and write, is twenty-one years of age, and pays at least 16s. a year in direct taxes. Those who are ineligible as Deputies are: all people dependent on the State, mayors and members

of ecclesiastical chapters (exception as regards State dependence being made in the case of higher officials, university professors, etc.). These exceptions, however, may not constitute more than 40 per cent. of the Chamber, and if more than this are elected, lots are cast in the different categories, and a new election has to take place to fill the seats of those who are unsuccessful. The dissolution and summoning of the Chamber lies with the Crown, but it appoints its own officials and has control over taxation in a higher degree than the Senate, as all finance bills are presented to it in the first instance.

The elections of Deputies always let loose a storm of political passion, as the parties contend with every legal weapon, and sometimes, indeed, with illegal ones. After the election there is a shower of protests and disputes because the lists of electors are as a rule incorrect, and can scarcely be otherwise under the above mentioned rule as to reading and writing. Falsification by throwing in ballot papers (*Pastetta*) beforehand as well as direct bribery and other tricks are often enough charged against the victorious party. This contest continues in the Parliament itself where the parties fight and quarrel about seats in the election commissions, and these are only finally settled after several years.

The government, too, is not inactive during the elections, but sets on foot an extensive agitation by the prefects, the newspapers, etc., and in some circumstances they have even drawn money from the banks and other institutions in order to make their influence over the elections more effective, and have thus often brought their opponents to grief.

Each seat in the Chamber of Deputies is of so much importance because this Chamber decides on the fate of the Ministry. When this is out-voted on any important question, it is by strict constitutional usage required to retire, and the King is obliged to charge one of the retiring ministers or some other Member of Parliament with the formation of a new Ministry. If there exists a clear majority, one of its leaders will receive this mandate, otherwise there begins an unedifying higgling among the several parties about the seats in the Ministry and the highest posts in the government which often (as in 1897) lasts for weeks, and inflicts the greatest injury on the whole State. Besides this it is held to be requisite that the different parts of the country should be represented in the Ministry.

Through their power of overthrowing a Ministry the representatives exercise a far-reaching influence on the Ministry as well as in all parts of the Government, and thus party interests make themselves felt in a thoroughly unhealthy manner. At the same time this brings about in the highest posts that frequent change in personality, in points

of view, in general direction of action, to which may be described the half and half character which clings like a curse to all governmental measures in Italy.<sup>1</sup>

The Ministers, who are as a rule deputies or senators, are responsible for all royal decisions, for projects of law and for the government of the State. They are the supreme executive officials and are liable to be impeached by the Chamber at the bar of the Senate in case of misconduct in office. There are Ministers with and without portfolio; for example, there was until a year or two ago a Minister for Sicily, but this post has been abolished. The number of portfolios is eleven: the Interior (*ministero degli interni*), Justice (*ministero di grazia e giustizia*), Education (*pubblica istruzione*), Agriculture (*agricoltura*), Manufactures and Commerce (*industria e commercio*), Public Works (*ministero dei lavori pubblici*), War (*ministero della guerra*), Marine (*ministero della marina*), Finances (*ministero delle finanze*), Treasury (*ministero del tesoro*), and Foreign Affairs (*ministero degli esteri*). One of the Ministers holds the presidency—the one who formed it and determines its general political direction. He can hold the presidency by itself or in conjunction with a portfolio, which seems the better justified by the additional influence it gives him, and this portfolio is as a rule one of the most important, such as the Interior, Justice, Foreign Affairs, or Finance. The President summons the cabinet councils (*consiglio dei ministri*), and he, as well as each of the Ministers, has to submit to it all bills of importance before they are brought forward in the Chamber of Deputies.

An under-secretary is attached to each Minister as his assistant and representative; he almost always stands and falls with him, and he is frequently the next candidate for the post when the party returns to the helm. These *Sotto segretari di Stato* are only partly taken from among the officials; for the most part the positions are claimed by deputies and they are then subjected to the same changes and the same insecurity as the posts in the Cabinet.

The prefects (*prefetti*) of the several provinces and the real governors of the country are under the Minister of the Interior. Each change of Ministry brings with it the dismissal or resignation of several prefects, as the party in power seeks to strengthen itself through these officials, who preside over the elections.

<sup>1</sup> The condition of affairs was very bad from 1896 to 1898, when, though the Marquis di Rudini remained chief minister, he formed five ministries in two years. He had no less than four ministers of education, five of justice, three of agriculture and of war, four of industry and of the post office, two of finance, and two of public works. No wonder that at the time of the tumult of March, 1898, the Government was completely shattered.

Side by side with the Council of Ministers there is a Council of State with a power of advising or deciding according to the subject in hand, and also a Court of Accounts (*Corte dei conti*) whose duty it is to control the whole administration and to guard against errors and omissions. All payments of over £80 must be previously stamped by this court, the caution money of officials must be deposited there, all appointments and pensions are registered there, and the final accounts of the State expenditure must be audited by the Court of Accounts before they are brought before the Chamber and passed. On the other hand the Council of State has the right to declare invalid any decision of the *Corte dei conti* which exceeds their power, and to refer them back for further consideration. This court also decides questions of extradition, and is the supreme tribunal in ministerial conflicts.

The land is divided for governmental purposes into provinces (*province*), the lands which are historically associated being too extensive and too vaguely defined. These latter divisions (*compartimenti*) bear the following names which are well known abroad, while the provinces are new and artificial divisions possessing little interest outside Italy. So far as was possible the historical boundaries have been kept in forming these provinces, the consequence of which, it is true, is that the sections are of very different value both as to size and political influence, and proposals have repeatedly been made to abolish the smaller prefectures for the sake of economy, but these have been always rejected through the opposition of the respective deputies and their friends who cannot agree to the degradation of the towns which elected them.

The former provinces, formerly small states, are as follows :—

Divisions (Compartimenti)	Area in Sq. Miles	Divisions (Compartimenti)	Area in Sq. Miles
Abruzzi and Molise . . . . .	4,457	Parma and Modena . . . . .	2,382
Apulia . . . . .	7,468	Piedmont . . . . .	11,478
Basilicata . . . . .	3,891	Romagna . . . . .	5,798
Calabria . . . . .	5,888	Sardinia . . . . .	9,405
Campania . . . . .	6,364	Sicily . . . . .	10,055
Latium . . . . .	4,719	Tuscany . . . . .	9,416
Liguria . . . . .	2,062	Umbria . . . . .	3,793
Lombardy . . . . .	9,499	Venetia . . . . .	9,573
The Marches . . . . .	3,886		

The new provinces are sixty-nine in number ; they are named after the town where the prefect sits, and are grouped as follows among the divisions.

Piedmont : 1, Alessandria ; 2, Cuneo ; 3, Novara ; 4, Torino.

Liguria : 5, Genoa ; 6, Porto Maurizio.

Lombardy : 7, Bergamo ; 8, Brescia ; 9, Como ; 10, Cremona ; 11, Mantua ; 12, Milan ; 13, Pavia ; 14, Sondrio.

Venetia : 15, Belluno ; 16, Padua ; 17, Rovigo ; 18, Treviso ; 19, Udine ; 20, Venice ; 21, Verona ; 22, Vicenza.

Emilia : 23, Bologna ; 24, Ferrara ; 25, Forli ; 26, Modena ; 27, Parma ; 28, Piacenza ; 29, Ravenna ; 30, Reggio.

Tuscany : 31, Arezzo ; 32, Florence ; 33, Grosseto ; 34, Leghorn ; 35, Lucca ; 36, Massa Carrara ; 37, Pisa ; 38, Siena.

The Marches : 39, Ancona ; 40, Ascoli Piceno ; 41, Macerata ; 42, Pesaro and Urbino.

Umbria : 43, Perugia.

Latium : 44, Rome.

Abruzzi and Molise : 45, Aquila ; 46, Campo Basso ; 47, Chieti ; 48, Teramo.

Campania : 49, Avellino ; 50, Benevento ; 51, Caserta ; 52, Naples ; 53, Salerno.

Apulia (Puglie) : 54, Bari ; 55, Foggia ; 56, Lecce.

Basilicata : 57, Potenza.

Calabria : 58, Catanzaro ; 59, Cosenza ; 60, Reggio (d. C.).

Sicily : 61, Calttanissetta ; 62, Catania ; 63, Girgenti ; 64, Messina ; 65, Palermo ; 66, Syracuse ; 67, Trapani.

Sardinia : 68, Cagliari ; 69, Sassari.

We may shew how unequal in size and importance these provinces are by comparing Leghorn and Grosseto, one with 127 square miles and 124,000 inhabitants, the other with 1,726 square miles, and 122,000 inhabitants, or Florence with Potenza, the respective numbers being 2,294 and 4,171 square miles, and 826,000 and 547,000 inhabitants respectively. In travelling from Leghorn to Arezzo up the valley of the Arno, the road passes in a few hours through five provinces, while in the Basilicata it is possible to travel nearly a whole day without leaving the single administrative department of Potenza.

Each province is further broken up into subprefectures (*sottoprefettura* or *circondario*) with an official at the head, which may be best compared as to size and administration with a county, the subprefect corresponding to the sheriff. These subprefectures are again divided into "mandamenti," and these as a last step in the division are followed by the communes. In 1896 there were 284 *circondarii*, 1,806 *mandamenti*, and 8,261 communes.

The representative body of the province is the *consiglio provinciale*, which is summoned by the prefect once a year to determine the budget and has the right of passing regulations which are valid after being approved of by the Minister.

The election of this council is subject to the rule that one-fifth of the members retire every year and the corporation takes five years to be entirely renewed, thus keeping up the continuity, which is of importance in view of the numerous undertakings and public works under their control. The franchise is the right of every citizen who is twenty-one years old, is able to read and write, and has goods of a certain value dependent on the size of the commune. This rating is low in the smaller communes, and higher in the larger ones, and the same regulations hold good for the town and the communal elections. The consiglio provinciale chooses from its own members a committee called the Deputazione provinciale, which represents the council permanently, and in all important questions has to assist the prefect. The province can raise money for public works of general utility, such as railways, streets, irrigation, and afforesting, and controls a number of local benevolent institutions. It is also its duty to keep up the departmental roads (*chaussées* of the second order), and to see to the carrying out of sanitary regulations. The meetings of this body and those of the deputation are true copies in their procedure of the Chamber of Deputies, they display the same passions and the same loquacity. The elections to the Consiglio provinciale are carried by the same means, for the disposal of large sums of money brings influence and the possibility of private gain with other advantages.

The communes are organized according to the same scheme. A Consiglio comunale is elected in the manner given above, which chooses a *Giunta* from its own body, of course belonging chiefly to the majority and changing like the town council by the partial elections. The mayor is at the head of the junta as executive officer (*Sindaco*). He is chosen by the junta and confirmed by the prefect, the minister, or the King, according to the importance of the town. The Sindaco superintends the municipal officials, the municipal schools, and many of the charitable institutions, he has to look after the supplies of gas, water, and electricity, the fire brigade, the cleaning of the streets, etc.

The police, on the other hand, are subject to the prefect and to the Minister of the Interior, and besides their duties in regard to criminals, have to see to public security (*pubblica sicurezza*), comfort and health (*pubblica beneficenza e polizia sanitaria*). The highest police official (*questore*) is posted at the chief town of the prefecture; there is no municipal police.

In the whole of this government the purest teaching of constitutionalism is carried through with marvellous thoroughness. We have everywhere two chambers arising from the secret voting of the citizens, and side by side with them a responsible executive. The

choice of the Senate by the King is an exception. Thus the widest opportunity for self-government is secured, and the liberty of the individual and of the great corporations is the distinguishing stamp of the Italian constitution. In all matters, large and small, the people rules itself, for the King has not departed during the last decade from his position of neutrality between the parties. In spite of this, the cry of the opposition at every election is about the governmental yoke with which mayors, prefects, ministers, unworthily oppress the free people, and after the victory of the former minority all the executive posts are changed in accordance with the simple but unlovely proverb *Ôte-toi que je m'y mette*. After some time the ruling party is in turn worn out and has to endure the same reproaches as they had hurled at their predecessors, and the gay transformation scene begins again. This pleasure might be granted to the people if this constant change did not give rise to the half and half treatment of all undertakings which has been found fault with above. The clique which gains possession of the helm of state comes in with extensive plans of reform ; what has been already commenced is put on one side to obtain money for the new projects, and before these have been completed the party has generally fallen again. So it goes on with small matters as with great, but especially in the communal affairs, when the State cannot interfere directly, and intrigues and nepotism have free play. It is no exaggeration to say that except in the towns of Northern Italy there is something rotten in the state of all the municipal governments.

The successful working of a liberal constitution and self-government presupposes a conscientiousness and disinterestedness among the officials. There is little of these qualities to be seen in Italy. The honorary posts are looked upon as a kind of milch cow, which must be milked with all one's force when one is at the helm. In addition to this, there is the want of scruple as regards public money, which, according to a very general view, exists in order to be appropriated on any plausible pretext or to be secured for one's family or friends. This is the very cause of the existence of cliques and of party organization, a cause most sharply blamed and detected as much as possible by the opposition of the time, but once in possession of power, the opposition does no better. If on any occasion the scandal becomes too great, or if the levity with which money is spent or the municipality is governed becomes too notorious, the junta and the syndic or certain leaders receive their dismissal. They frequently retire to wait for better times, and no one thinks of bringing them to account for their blunders or their direct breach of the law, for the feeling of responsibility towards the community as a whole is absent from the minds of those worthless leaders as well as of their opponents,

who, be it said, are afraid of creating a precedent against themselves by any prosecution of the kind.

The country and the poorer population often suffer in an extraordinary manner under these circumstances. For, in spite of the freedom of election, only the more highly rated can vote, and the power in the communes almost always lies in the hands of a kind of aristocracy or timocracy, who carry through their candidates with the help of their dependents. They then in the Consiglio comunale determine the amount of the rates and their augmentation, which they foist on the needy people. If the burdens on the ordinary necessities of life (rent, bread, wine, oil, etc.) become too heavy, the people rise, rush together, storm the town hall, set it on fire, or burn the toll houses which stand before the gates, and thus compel either a temporary alleviation of taxation or the fall of the ruling party.

This explains the continual disturbances in the Romagna, Southern Italy, Sicily and Sardinia, which can only be permanently quieted by purification of the communal governments and a radical reform of the system of taxation. If, in addition to this, the market of the world shows high prices, as in May 1898, the state of affairs may become very serious for the government. The country needs a stronger government, and an independent and better paid body of officials would be a real blessing. Young men of intelligence, who now seek their fortunes in the ranks of barristers or in a free political career, would be attracted to such a body. Italy emancipated from the yoke of the worst absolutism, has been favoured with one of the freest constitutions in Europe, but one which does not correspond to its requirements, and thus with some good has brought much evil and many abuses. It is all the greater pity, as this rich, blooming country might make its forces available in a very different manner, and might open numbers of new sources of wealth to its inhabitants.

Above all parties, however, stands the King, to whom all children of the soil, with the exception of the republicans, look up with love, confidence and reverence. Succour is hoped for from him if the confusion and oppression become too unbearable, and this succour he has rendered again and again so far as his means and authority have permitted. The founder of United Italy, Vittorio Emanuele, *il re galantuomo, padre della patria, il gran re*, is still beloved and honoured almost as a saint by all classes of the people. Let us hope that his successors may be able to establish internal unity, and still more may impress it on the conscience of the people that the State does not exist only for the sake of the individuals, but that the individual also exists for the sake of the State.

## 2. ARMY AND NAVY

Since the foundation of the new State, general compulsory service on the Prussian pattern has prevailed in Italy. The King is Commander-in-Chief, the whole military and naval power is at his disposition, and he has the right of declaring war and concluding peace. His chief officials, who have to bear responsibility for him in time of peace, are the Ministers of War and of the Navy, the first of whom has always been a general, but the latter is occasionally a civilian (Brin, died 1898). The law of compulsory service was introduced in 1875, and enacts that every man above twenty who is fit for service must pass from two to three years with the colours. People of higher education, who prove this by passing an examination, are permitted to serve as volunteers for a year on payment of a premium that varies from £48 to £80. Besides this, there are alleviations and dispensations for those who are indispensable for the support of their families. After service with the colours, which lasts for three years in the cavalry, they pass over to the Reserve for five or six years, then for three or four years to the Garde Mobile, which corresponds with the first division of the German Landwehr, and finally for seven years to the Territorial Militia, so that the whole period of liability to service lasts nineteen years. For many classes, however, a longer time of service is possible, even amounting to twenty-three years. Those who are dismissed as over the required number form the Second Category of the army, and are only drilled for a few separate months in the course of several years. The remainder of those exempted form the Third Category, and are not drilled at all.

The strength of the army in time of peace is 205,000 men, with a yearly addition of 98,000 recruits. In war there ought to be, according to the lists, 1,424,000 men of the First Category (line, reserve and militia), and of the Second and Third Categories, a million and a half of whom, however, are untrained, there should be 1,875,000, so that altogether over three millions could be put in the field.

There are at the present time twelve Army Corps, whose headquarters are at Turin, Alessandria, Milan, Piacenza, Verona, Bologna, Ancona, Florence, Rome, Naples, Bari and Palermo respectively. Each of these has two divisions of from two infantry brigades to two regiments, besides one or two regiments of cavalry, two of artillery, and some miscellaneous bodies, belong to the division. The Bersaglieri are a kind of troops corresponding to the German Jäger (sharpshooters). They are great favourites with the people, and are distinguished by their handsome persons, their becoming uniform, and still more by the black feathers in their caps. They are considered

specially brave and impetuous in attack. As a sign of these qualities they make a point, even in time of peace, of dismounting from their horses when in full gallop, to the great joy of the applauding spectators. A special arm of the service, the Alpine troops, is charged with the defence of the passes and roads in the Alps. These are sharpshooters with artillery, provided with light cannon that can be taken to pieces and carried by mules, and, like the Bersaglieri, they are immediately under the Commander-in-Chief.

Gendarmes (Carabinieri) and their battalions of cadets are also counted with the army. These are divided into twelve legions, each of forty-three divisions, and are said to have altogether 3,900 mounted gendarmes, with 21,000 on foot. They have a striking uniform, black coat and trousers, with silver facings, and a cap with a coloured plume for gala days, and they perform the same service as German gendarmerie. They are partly collected in barracks in somewhat large bodies, but are partly distributed over the whole country, a station being placed in every populous town. This is necessary owing to the restlessness of the population, all the more that the mountain roads are long, difficult, and often only to be traversed on foot. The Carabinieri always go about on duty two together, so that the popular joke is that they are all twins. The malefactor sought after would scarcely fear a single gendarme, and could easily rid himself of his presence by a revolver, but with two this is not so easy, especially as the Carabinieri are always well armed. Only able and careful men, honest and trustworthy, are admitted to this corps, and they are correspondingly well paid. But as people of this stamp are chiefly to be found in Northern Italy, it follows that Piedmontese, Lombards and Tuscans predominate in the corps, and the inhabitants of Southern Italy are by no means pleased at this preference, which partly explains their hatred against the Carabinieri. The smaller scattered divisions have to supply regular reports to the Provincial Capital, and these then go on to the Prefect, the Court of Justice, or the headquarters of the army corps.

There are only two kinds of cavalry, the lancers (*lancieri*) and hussars, if we may apply this name to the Cavallegieri. They are divided into twenty-four regiments of six squadrons each. Several regiments compose a brigade, of which there are nine. On the broken ground of Italy, where it is impossible for large masses of cavalry to deploy, except in the plain of the Po, in the Campagna and Campania, there is no pressing need for this arm, which is used principally for reconnoitring and in field days on the above-named plains, and these troops are consequently concentrated in Northern Italy and at Naples. The Italian army was composed in 1897 as follows:—

Ninety-six regiments of Infantry, each with three battalions of four companies.

Twelve regiments of Bersaglieri, with three battalions of four companies.

Eight Alpine regiments, with twenty-two batteries.

Twenty-four regiments of Cavalry, each of six squadrons.

Twenty-four regiments of Field Artillery.

One regiment of Horse Artillery.

One regiment of Mountain Artillery, with fifteen batteries.

Eleven brigades of Siege Artillery.

Eleven regiments of Coast Artillery.

Five regiments of Engineers.

One Railway Brigade of six companies.

Eleven legions of Carabinieri and Cadets.

Twelve companies of the Ambulance Corps.

Twelve companies of the Army Service Corps.

There are ammunition supply companies attached to the Artillery and Engineers, which belong to these, as do also the various depots.

The official distribution of the men among the different arms is given in the following table :—

	Officers and Officials	Non-Com. Officers and Men	Horses and Mules
General Staff . . . . .	290	—	593
346 Battalions of Infantry and 98 District Companies . . . . .	8,017	143,750	2,821
144 Squadrons and 24 Depots . . . . .	960	23,490	26,901
207 Batteries, 76 Artillery Depots, and 40 Ammunition Depots . . . . .	1,739	34,980	13,019
64 Companies of Engineers and 10 Ammunition Companies . . . . .	597	8,969	868
12 Ambulance Companies . . . . .	585	2,593	64
12 Companies of the Army Service Cps. Officers in the Government . . . . .	325 1,183	2,036 —	— 4
12 Legions of Carabinieri . . . . .	551	23,948	4,209
Cadets . . . . .	—	1,388	871
1 Veterinary Corps . . . . .	191	—	8
	14,438	241,154	49,358

In time of war the different army corps are united according to requirement to form armies, and the special arms are distributed to the corps under a ready elaborated plan. The Alpine troops are made use of according to circumstances, and the Carabinieri are summoned from their stations to form six battalions. To these are

added the Garde Mobile, with fifty-one regiments of infantry, twenty-battalions of Bersaglieri and twenty-eight Alpine companies, sixty-three batteries of field artillery, fifteen of mountain artillery, twenty-four ammunition companies, seventy-eight companies of siege artillery, fifty-four of engineers and four ammunition companies. In case of need, the territorial militia can be called out. They amount to 324 battalions of infantry, twenty-two of Alpine troops, 100 companies of siege artillery, and thirty companies of engineers.

The weapon of the infantry of the line and reserve is a quick-firing rifle (1891 model) of .26 inch calibre, and with a magazine attached holding six cartridges. The calibre is one of the smallest used in Europe, and the trajectory is long, owing to the relatively large charge of gunpowder. The old needle gun has to suffice for the militia, as the introduction of the new magazine rifles has not yet been completed on account of the expense. The field artillery used breech-loaders of 3 to 5.6 inches calibre, carrying shot made of steel or gun metal. The balls weigh 9.35 and 14.85 lbs. The charge is of smokeless powder (ballestite). The field artillery is supplied with steel, bronze and cast iron of 3.6, 4.8, 6 and 7.6 inches calibre, with howitzers of 6 and 8.4 inches, and three different kinds of mortar. These cannon are fitted with the French screw backs and copper guide rings. The large shot of the coast batteries are manufactured partly by Krupp, but still more by Armstrong, and are of 9.6, 12.8, and even 16 inches calibre, made of manganese iron, with chilled steel shot. The shot and shell made in the country come chiefly from the extensive foundries belonging to the State at Terni, some of the heavy marine shot and shell are cast and repaired in the Armstrong works at Pozzuoli, but much is not actually manufactured there, as the firm find it more convenient to get it made in England under expert supervision. There are important State works for the production of small arms in the district of Brescia, at Gardone in the Val Trompia, and in several other Alpine valleys.

Recruiting and mobilization devolve upon the twenty-four divisional detachments, ninety-eight companies of which are distributed through the country, and resemble the German *Bezirkskommandos*. It is here that the soldiers have to report themselves, here they obtain leave of absence or exemptions from service, and here the lists of the militia are drawn up, and the men are allotted to their respective assemblies for drill. A few officers, non-commissioned officers and a small body of men form the nucleus for making a levy in case of need.

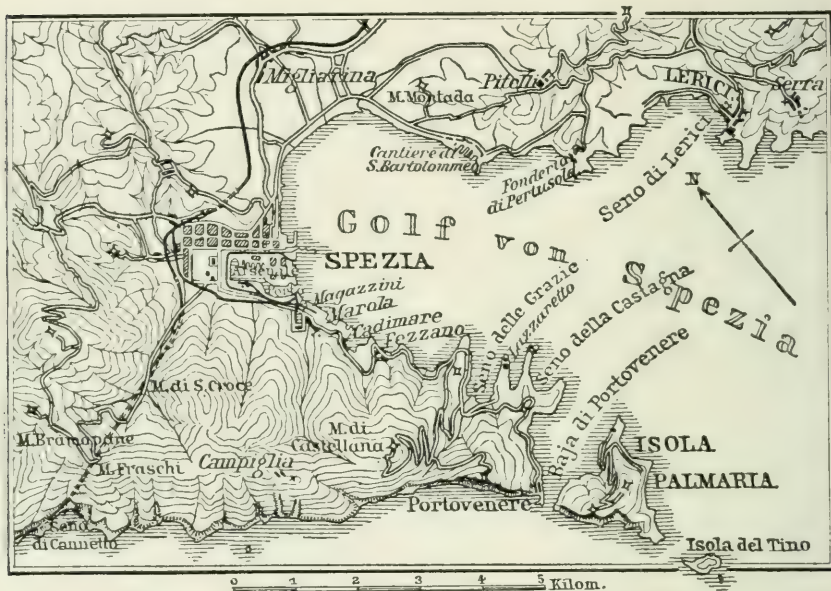
The fortification of the country is dependent on its nature and form, and also on the kind of attack to be expected. In the years before 1880 Austria was the arch-enemy, against whom the kingdom thought

it had to defend itself all the more that this power was in possession of various excellent passes through the Alps and of the means of ingress into the plain by the Garda Lake and the Valley of the Adige, and through the Val Cammonica into Friuli. As the relations with Austria improved, those with France grew more strained in consequence of the formation of the Triple Alliance. The position of Italy on the summit of the Cottian and Graian Alps is relatively a favourable one, but the passes have had to be strengthened by batteries and forts, and thus made impassable to a hostile army. As a reserve there are several good sized strongholds for concentrating the troops and storing war material. Thus Verona and Peschiera cover the frontier against Austria, Alessandria and Casale are points of assembly for armies directed against France.

The line of the Po is of the highest strategic importance, as its former channels render the river difficult to cross. In 1866 the Italians under Cialdini were detained for a month at Borgoforte unable to cross, although their number largely exceeded that of the enemy. The line of the Po is covered by Piacenza, Mantua, Legnago, Guastalla, and even Venice, in addition to the two Piedmontese fortresses. Behind this strong line there is opposed to an enemy pressing in from the north the bulwark of the Apennines, which can only be conveniently crossed near Genoa, Pontremoli and Bologna, and on the coast of the Adriatic. All four places are consequently fortified. Bologna has been converted into a fortress of the first rank by means of a number of detached forts erected in the plain or on the lower skirts of the mountains. The pass of Pontremoli leads to the Ligurian coast, where it is terminated by the town of Spezia. Rome, with its fourteen detached forts, is the only important place of arms in the rest of Italy. Capua, on what was once the important line of the Volturno, has only a few antiquated fortifications scarcely capable of defence. Naples can hardly be considered as a fortified place at all.

The steep slope of the seashore on long stretches of coast gives opportunity for the approach of foreign ships of war and the landing of foreign troops. To prevent this is the chief business of the Italian fleet, all the more that owing to the mountainous nature of the interior, the railway lines, which are indispensable for mobilization transport, and supply, run along the coast and might be placed under fire and destroyed. For this reason the fleet is kept relatively strong and possesses a number of fortified harbours on all the coasts as points of support. The series of naval harbours begins in Liguria with Genoa. Then follows Spezia with its strongly fortified bay. This has been the arsenal and repairing station since 1853, and was the chief naval station of the kingdom of Sardinia. There are smaller

fortifications on Elba and at Civitavecchia. The naval port of the Campanian coast is Gaeta, situated under a rock, armed with cannon and difficult to take. Naples, on the other hand, is only defended by the old forts Castell dell' Ovo and San Elmo, the value of which against an armour-plated fleet is very doubtful. The transit between Sicily and Calabria is commanded by the forts above Messina and some works on the shore. Tarentum, too, is of great importance with its fully protected inner harbour, where the arsenal docks and wharves are situated. On the Adriatic only Ancona and Venice are fortified, the flat coast making any approach difficult, besides the fact that the



NAVAL PORT OF SPEZIA WITH ITS FORTIFICATIONS:

Apennines form a protecting wall against a hostile attack. The entrances into the lagoons of Venice are barred by numerous works, which render them almost impossible to force, and a second ring of batteries has been erected within the lagoons around the town.

The two large islands of Sardinia and Sicily have as yet no central fortified post. The fleet has to bear the chief part in their protection, but a hostile approach ought to meet many hindrances through the patriotic feeling of the people. In Sardinia the interior is nearly unapproachable, and is dangerous on account of swamps, forests and fevers, so that only a small number of troops need to be stationed on the island. At the northern point the island of Maddalena, with

some neighbouring cliffs, has been erected into a fortress and a naval port, so that the Italian fleet from that place, together with squadrons from Spezia and Gaeta, command the Tyrrhene Sea, and a few ships suffice to bar the Straits of Bonifacio (cf. map, Ch. xvi. p. 463). In Sicily the same duty is performed for the Ionian Sea by Augusta between Catania and Syracuse, as well as Messina. As the French have obtained a new and strongly fortified place in Biserta, from which a descent into Sicily is practicable, plans have been formed for the formation of a third naval port in Sicily, but they have been abandoned partly on account of the expense and partly on account of the absence of shelter from wind and waves on the south coast of the island. On the other hand, the plan of fortifying Castrogiovanni to form a central point of protection has been kept steadily in view. Some preliminary works are said to have been commenced there which would serve as a foundation for a fortified camp in case of need.

If a strong fleet protects the coast, an invasion over the Alps is made difficult by obstructive forts. Works of this kind lie on a line from San Remo to Cuneo, and there are several close together at the Col di Tenda in order to protect the roads leading from Nice and Mentone to southern Piedmont. Two of these forts prevent an invasion from the sea at Savona, where the Apennines could be passed by an enemy after landing. On the two sides of the middle valley of the Chisone stand the fortresses of Fenestrelle, to guard against an invasion over Mount Genèvre, a similar purpose is fulfilled by the batteries and redoubts at Exilles in the upper valley of the Dora Riparia, which bar the passage of the Col de Fréjus. Of course the entrance of the Mont Cenis tunnel is sufficiently guarded, just as the St. Gothard at Airolo has been fortified by the Swiss. La haute Savoie, ceded to France in 1860, is said to be neutral ground, but still the exit of the Dora Baltea Valley above Ivrea has been closed as a precaution by Fort Bard, which has been a fortification since ancient times, the passage of the St. Bernard depending on its possession. Just as the Swiss have provided their main roads with covered batteries, so the Italians have fortified the exit of the Simplon pass at Lago Maggiore, that of the St. Gothard railway at Lake Como, as well as the Splügen pass, with small obstructive forts.

The famous gorge of Verona occupies a very strong position at the exit of the valley of the Adige, and Peschiera prevents it from being turned by way of Mori-Arco and Lake Garda. Smaller works at Tirano and Edolo close the Adda Valley and Val Cammonica against an Austrian army which should advance by Adamello. Finally, several works have been erected along the railway to Pontebba, of which those at Gemona-Osoppo command the entrance to the plain,

and the small fortress of Palmanova does the same for the gate of the Isonzo Valley.

All this preparation for war requires a vast expenditure of money, almost too great for the debt-laden country. In the budget of 1897-8, £9,170,800 ordinary, £38,200 extraordinary, and £253,000 temporary expenditure, together £9,462,000, were voted, one-seventh of the whole expenditure of the State—£67,000,000. The position of Italy as one of the Great Powers, her value in the Triple Alliance and her standing abroad, rests upon her army and her readiness for war. The Italians are indeed aware of this, but in spite of it attempts have not been wanting for many years past to cut out many posts from the budget of the Minister for War. From the time of the eighties, when the financial position was getting worse after the abrogation of the French Commercial Treaty, and while the Dual Alliance was demanding that the defensive force should be strengthened, the Ministers for War have had to carry on severe contests with their colleagues of the Treasury and Finance departments, and with the deputies belonging to the Radical party, about the maintenance of the now existing organization, about the introduction of new weapons and the like. One proposal in the direction of retrenchment, supported even by military men, was the cutting down of the number of army corps from twelve to ten. In many cases furloughs have been granted to the men before the completion of their time of service, the manœuvres have been restricted, captains have been deprived of horse money in time of peace, the higher officers have had the number of their horses and servants reduced, etc., in order to bring about an approach to equilibrium between income and expenditure.

We cannot but acknowledge what the officers of the War Ministry and of the general staff have accomplished under these difficulties, for in general order prevails in military matters. Then great masses of militia have been gradually enrolled and supplied with arms, so that the first category of the army turns out none but useful soldiers. The two other categories consist, it is true, chiefly of men without any military training, and their value in the field is problematical. Even if drill and accuracy in carrying out movements leave something to be desired, as is shewn at each parade and practice, yet the Italians must be considered as good soldiers. They are willing and obedient, intelligent, capable of enthusiasm, self-sacrificing, courageous and moderate in food and drink. In the wars of 1848, 1859, 1866, and lately in the battle with the Abyssinians, both common soldiers and non-commissioned officers fought with courage and endurance, and gained glory in several cases. The same holds good of the lower commissioned officers, but the more highly placed officers were wanting

in brilliancy and did not inspire confidence. Just as La Marmora allowed himself to be surprised at Custozza in 1866, and completely lost his head, leaving the army to struggle on against the Austrians without supreme command till they could fight no longer and had to retire, so in 1896 levity and imprudence on the part of their leaders delivered the Italians into the hands of the Abyssinians and brought about defeat at Abba Garima, which threatened to degrade their army in a military sense in the eyes of Europe.

However this may be, and whatever may be the fate of the Italian army in a great European war, for the people it is a real blessing, an educational institution whose excellent effect will show itself still more in the future than it does in the present. Young fellows learn in the army for the first time in their lives to obey strictly and without cavil. This is of great value, because the education of the young does not accustom them to obedience, and the carrying out of an order is constantly delayed by words if the person commissioned is not willing to carry it out or requires first to be persuaded to do so. Then military service brings the people out of their villages and provinces into other districts, puts them in touch with different dialects, manners and customs, thus favouring the assimilation of provincial peculiarities, the decline of particularism and the growth of the thought of unity. The incitement to cleanliness is not without its importance in the case of the southern Italians, and lastly a new opportunity is afforded during the time of service for the young men to pick up the neglected art of reading and writing, as elementary courses are held in the barracks for the unlettered that the soldiers may be able to understand written orders, sign posts, etc.

In marine affairs the Italians of some centuries ago were long the unquestioned masters and supplied the Spaniards and Portuguese with some of their greatest navigators, such as Christopher Columbus and Amerigo Vespucci. The people of Amalfi and later on those of Pisa, Genoa and Venice had fleets of warships with which they ruled the Mediterranean and protected their trade, and by means of which, even in the time of the Crusades, they made conquests, and later on opposed energetic resistance to the attacks of the Turks. The Dorias of Genoa produced a series of naval heroes from the twelfth to the sixteenth century, who fought successfully against Pisa in 1284, against Venice in 1297, 1340 and 1350, as well as against the Saracens. Andrea Doria, admiral first of Francis I then of Charles V, and finally supreme commander of the Spanish fleet, gave to his city a constitution which lasted till its incorporation in the Ligurian Republic, and proved himself the successful champion of Spain against Turkey and Barbary. Corresponding to this race of Dorias, Venice had the members of the

Dandolo family. The most important of these was Enrico Dandolo (1108-1205), who extended the rule of his city over the Byzantine Empire by engaging those who were taking part in the fourth Crusade to assist Venice in the destruction of the Empire in Constantinople and in the conquest of the city. The augmentation of power was so great that the seat of government was near to being transferred from Venice to the Bosphorus.

From the sixteenth century, however, the marine power of the Italian cities declined, and the foreign rule of Spaniards, Austrians and French was directly antagonistic to its resuscitation. In the times of the Napoleonic rule the English had entire command of the sea, and since then they have held possession of Malta, which was confirmed to them at the Congress of Vienna. The kingdom of Sardinia created a small fleet for itself, using first Genoa and then Spezia as naval port, and one of its most important deeds was the protection of the Garibaldian Volunteers when they landed in Sicily in 1860. The unified kingdom has spent much money in creating a formidable navy, and at the outbreak of the war with Austria, in 1866, it possessed a respectable number of armour-plated vessels. In spite of them Tegethof succeeded in surprising the Italian fleet at Lissa on July 20, and sinking the armour-plated *Re d' Italia*, the Admiral's ship, with his antiquated wooden vessel. Since then the Italian fleet has had no opportunity of showing its efficiency.

From the reasons given above at sufficient length the country has every reason to keep up an efficient navy and to labour unceasingly for its construction despite all pecuniary deficiency. But as the ships it has at present would scarcely suffice for the defeat of the strong French navy a kind of agreement seems to have been made with England to meet the case of an attack by sea.

In 1897 Italy had 328 vessels of war, among which ships of the line and blockade runners predominated, while cruisers were much fewer in number.

Altogether there were 25,275 men in the navy lists of 1897, 1,546 of them were officers, 18,174 sailors on board, 5,455 landmen among whom are musicians, hospital attendants and telegraphists.

Kind of Vessel				Tonnage	Indicated Horse Power	Guns		Torpedo Tubes	Crew
						Over 4 inches Calibre	Under 4 inches Calibre		
12	Ships of the Line.	Class 1.		148,710	152,977	204	344	53	7,272
4	"	"	2.	26,680	52,000	72	—	16	1,800
6	"	"	3.	25,950	22,603	73	125	19	2,301
5	"	"	4.	17,780	32,867	40	79	18	1,536
9	"	"	5.	21,696	65,599	88	168	21	2,301
13	"	"	6.	11,086	46,057	10	110	67	1,443
3	"	"	7.	1,069	7,000	—	15	8	164
6	Torpedo Boats.	Class 1.		846	13,600	—	12	18	141
94	"	"	2.	7,550	96,400	—	188	235	1,598
38	"	"	3.	1,996	1,680	—	—	76	417
6	"	"	4.	330	6,750	—	—	30	230
2	Auxiliaries.	Class 1.		13,400	7,120	—	10	—	397
8	"	"	2.	22,980	20,771	42	17	6	2,022
11	"	"	3.	15,278	11,870	16	39	2	1,397
18	"	"	4.	11,924	13,121	18	25	—	1,009
30	Ships for harbour service			4,269	2,919	2	14	—	548
24	Transports . . . . .			971	1,171	—	2	—	262
9	Dredgers . . . . .			4,472	1,368	—	—	—	144
6	Lagoon Gunboats . . . .			528	390	—	6	—	78
16	Torpedo Shallops . . . .			196	2,310	—	—	32	161
8	Auxiliary Cruisers . . . .			44,880	29,795	—	48	—	—
328	Vessels . . . . .			382,591	588,368	565	1,202	601	25,221

In 1897-8 the charge for the navy was £3,875,986 ordinary and £171,000 extraordinary expenditure, that is, over £4,000,000, being one-third of the cost of the army. The three chief arsenals are Spezia, Tarentum and Venice, their protected position rendering these cities specially fit for the purpose.

At any rate Italy has done her best to be in a position to intervene with a decisive word in any contest between France and England for the Mediterranean Sea, and to guard her own rights and interests.

### 3. JUDICIARY SYSTEM

The judiciary system of Italy, like so much else, is framed on the French model, and the Code Napoleon is the foundation of the present practice. All justice, civil and criminal, is administered in the name of the King, and the right of pardon is his also. The supreme executive officer is the Minister of Justice or Keeper of the Great Seal. Judges and courts of justice are placed under his direction.

The lowest judicial officials are the justices of the peace (Conciliatori), of whom there is at least one in each commune, who are selected by the King from a list of communal councillors submitted to him. To

them come all trifling cases and they perform their functions without remuneration. The next grade corresponds to the German *Amtsgericht* (Pretura), where a judge (Pretore) decides about misdemeanours and smaller civil suits. There ought to be a prætor's court in the chief town of every *Mandamento*. While other judges cannot be transferred or dismissed after three years' service, except in the interests of the service, the prætors are at the sole disposition of the minister and may be sent by him where he pleases. Civil actions to a greater amount than £60, as well as criminal cases, are to be brought before the Courts of First Instance (*Tribunali civili e correzionali*). In cases of felony a trial follows before a jury in an assize court (*Corte d'assise*), which is summoned in the chief towns by the court of the next grade, the Court of Appeal (*Corte d'appello*) when required. This appeal court takes cognizance of civil as well as of criminal appeals from the two lower courts and also decides election petitions concerning the representation of the province (*Deputazione provinciale*). The courts of ultimate appeal are the Courts of Cassation, of which there are five, at Turin, Florence, Rome, Naples and Palermo. They have to watch over the uniformity of judicial procedure and to decide questions on the competence of the lower courts. The Court of Exchequer and the Privy Council (*Corte de Conti* and *Consiglio di Stato*) sit together to form a supreme court for questions of administration. Besides these there are courts for settling trade disputes and where these do not exist the civil courts act instead.

Prosecutions on behalf of the State are conducted by Public Prosecutors (*Procuratori del Re* and *Procuratori generali*), the former before the courts of first instance and the latter before the courts of appeal. Defence is conducted by an advocate. The *Uditori* and the *Aggiunti* resemble the German Referendaris and Assessors respectively, but may also be entrusted with the representation of the Public Prosecutors. Advocates and Public Prosecutors are united in colleges to which admission is obtained by a kind of examination. The members of a Juristic Faculty or other institute of university standing are not required to undergo this proof if they have been five years in the service, and they enjoy other privileges in the courts of appeal.

In times of external danger or of insurrection and riot the King can, with the assent of the Ministry and Privy Council, suspend the ordinary criminal courts and proclaim a state of siege. This has been done several times of late owing to the riotous spirit of the people, especially in 1894, when signs of revolutionary movements were perceptible in Lunigiana, Romagna and Sicily, and in 1898, at the time of the risings in Milan, Tuscany and Apulia.

In general the tolerably independent position of the judges and the

court of appeal forms an efficient protection for the security of justice, and a state of affairs such as prevailed under the Bourbons in Naples and Sicily or such paralysis of the courts as existed in the States of the Church are now impossible, so that since 1860 and 1870 an enormous advance is to be recognized in this respect.

The administration of justice suffers under only two defects; first the too small number of the judges, who are all overburdened with work, and secondly the procrastination which too often takes place by the raising of questions of competence or by tricks on the part of the advocates. In juristic endowments the Italians are worthy successors of the Romans, and are masters in the art of using every device of law, so that if the case is not quite clear, nothing is gained by going to law. A young man who devotes himself to the profession of an advocate has to spend some years with a jurisconsult, but still more he has to attend trials in order to learn the finesse of explaining, one might almost say of distorting, the law, by listening to the speeches and replies, and forming himself upon them. A trial often loses its serious character and becomes a kind of spectacle by the sounding words, the gesticulations and passionate pleadings of the advocates, who, if they are famous men, are clapped by the younger lawyers. In criminal trials it is interesting to see how the defending counsel try to work upon the jury by all means in their power and often show a surprising eloquence in rousing the sympathy and generous feeling of their hearers. These courts, which seem to be animated by the spirit of the sentence "*Odiare il reato, amare il reo*," have been carrying this too far of late, and would doubtless have injured their own reputation by it if the people did not delight in a "*sentimento generoso*" of this kind, and find satisfaction for their feelings of justice in private revenge.

The number of felonies and serious misdemeanours is abnormally large in Italy and, by no means to its honour, it stands in this respect highest in Europe.

In the following figures the first row gives the number of crimes for the corresponding years, the second the number of criminals per 100,000 of the population.

	CRIMES	PER 100,000 INHABITANTS
1887	526,300	1789·95
1888	552,997	1868·73
1889	571,427	1918·83
1890	609,873	2034·97
1891	651,242	2159·40 ]
1892	661,479	2179·63

Showing a melancholy increase of crime, apparently owing to the sad

economical condition of the country. Among these offences about one half per cent. are murders.

Condemnations for murder were—

CASES PER 100,000 INHABITANTS		
1887	2,805	9.27
1888	2,574	8.42
1889	2,492	8.05

While the corresponding numbers in Germany were—

1887	439	0.92
1888	382	0.80
1889	416	0.85

Thus there are ten times as many murders in Italy as in Germany, and if we add the attempted murders the proportion is still greater.

On the other hand in respect to theft Germany surpasses Italy, which may very well be due to the fact that the milder climate and the plentifulness of food in Italy diminish the causes of this species of crime, especially as regards thefts from hunger.

ITALY			GERMANY		
CASES PER 100,000			CASES PER 100,000		
1887	45,274	142.93	1887	86,174	181.27
1888	48,034	157.15	1888	85,167	177.36
1889	50,607	163.63	1889	94,151	194.08

Latterly the number of thefts has increased. In 1890 it had reached 51,297 with 169.03 on the 100,000, a sign of the increasing poverty of the people caused by poor harvests and bad financial economy.

The provinces are also very different from one another in respect to crime. In the three years, 1890 to 1892, the number per 100,000 stood at 2124.99 for the whole kingdom, the highest mean values belonging to Leghorn, Rome, Cagliari and Naples, the lowest to Rovigo, Cremona, Novara and Pavia, viz. :—

Leghorn . . .	5664.09	Rovigo . . .	954.23
Rome . . .	5485.70	Cremona . . .	879.35
Cagliari . . .	4427.44	Novara . . .	878.89
Naples . . .	4023.31	Pavia . . .	776.01

The numbers for equal areas with respect to the various classes of crime and the distribution of these among the different regions are quite interesting.

We get from these, first, that crimes of violence are committed chiefly in Southern Italy (Sicily, Calabria) and Sardinia. Theft and fraud are predominantly practised in Sardinia, Rome and Naples,

forgery and coining in Ancona and Leghorn, while resistance to lawful authority is most frequent in Rome, Leghorn, Naples and Venice. Northern Italy (Piedmont, Lombardy, the Emilia) with Tuscany and Umbria show the least amount of crime. Leghorn and Massa Carrara form the only exceptions in this well behaved region, the former on account of the offences connected with trade, the latter on account of the excess of badly paid workmen employed in the marble quarries. The numerous crimes of violence (murder, attempted murder, rape, offences against morals) in the southern districts and Sardinia are easily explained by the passionate nature of the inhabitants and by their custom of exacting vengeance for grievances of all kinds by means of the dagger and the revolver.

The following are the mean numbers per 100,000, of crimes of all kinds distributed among the different regions.

	Total of all Crimes	Murder	Attempted Murder	Robbery with Violence	Theft	Forgery and Coining
Piedmont . . . . .	1147·45	5·39	107·57	6·42	246·34	36·80
Liguria . . . . .	2402·45	9·70	190·23	10·86	380·82	56·53
Lombardy . . . . .	1246·22	2·91	106·30	5·05	276·41	32·43
Venice . . . . .	1482·00	3·55	108·67	3·15	365·67	27·00
Tuscany . . . . .	1686·43	6·24	139·76	5·24	265·16	40·81
Emilia . . . . .	1526·34	6·26	122·24	8·30	287·39	40·56
Marches and Umbria . .	1651·50	10·42	231·23	4·76	291·96	64·12
Latium . . . . .	5485·71	19·54	390·75	16·98	684·21	71·59
Campania and Molise . .	3049·83	24·26	475·77	9·91	346·42	39·72
Basilicata . . . . .	2796·56	23·20	421·94	3·71	710·42	21·91
Abruzzi . . . . .	2929·77	18·29	484·36	3·15	568·29	48·77
Apulia . . . . .	2235·60	12·90	398·85	6·37	377·42	31·66
Calabria . . . . .	3364·11	25·88	602·50	5·88	435·51	22·61
Sicily . . . . .	2276·97	29·95	357·09	19·63	398·86	33·79
Sardinia . . . . .	3945·65	23·54	262·49	20·51	762·67	42·12
Whole Country . . . .	2124·99	13·24	258·59	8·41	362·83	38·42

Now as murder, manslaughter and violence are, unfortunately, of every day occurrence in Italy we may add a still more detailed table of different provinces, also for the years 1800–1892.

## MURDER AND MANSLAUGHTER

Girgenti . . . . .	65·88	Como . . . . .	2·54	Catania . . . . .	24·76
Caltanissetta . . . .	42·04	Milan . . . . .	2·45	Messina . . . . .	19·77
Palermo . . . . .	33·22	Rovigo . . . . .	2·13	Syracuse . . . . .	12·04
Sassari . . . . .	32·29	Treviso . . . . .	0·75	Trapani . . . . .	21·26
		Massa Carrara . . . .	16·32		

## ACTS OF VIOLENCE

Reggio Calabr.	708·28	Ravenna . .	76·38	Caltanissetta	519·64
Catanzaro . .	621·80	Belluno . .	75·68	Catania . .	389·26
Avellino . .	580·66	Rovigo . .	75·47	Girgenti . .	437·04
Aquila . .	552·48	Sondrio . .	63·28	Messina . .	360·21
				Palermo . .	217·98
				Syracuse . .	440·10
				Trapani . .	292·80

Massa Carrara 286·45

At the head with regard to thefts stand: Sassari, Cagliari, Aquila: Potenza; fraud: Sassari, Rome, Naples, Cagliari; forgery and coining, Leghorn, Ancona, Macerata; offences against morality: Catania, Caltanissetta, Cosenza, Catanzaro; resistance to state authority: Rome, Naples, Leghorn, Venice.

In any case these numbers point to a savagery in morals, and this has made even Italians abroad much feared and disliked, so that in France, Brazil and North America regular conspiracies and even lynchings have been resorted to against these foreigners.

The prison accommodation is quite insufficient for the requirements of this excess of crime. Besides houses of detention before trial there are houses of correction and convict prisons (*ergastoli, case a lavoro forzato, reclusioni e case di forza*) of different grades, some where the prisoners are separated completely, or only at night, some with common living and sleeping rooms.

Altogether there were in 1894, 121 prisons for men, containing 6,603 cells for solitary confinement, 1,793 cells for isolation at night, 1,361 sleeping rooms for 33,623 criminals and 629 labour rooms for 15,205 convicts.

The women were distributed among seven prisons with 226 cells for solitary confinement, 157 cells for isolation at night, 50 sleeping rooms for 1,556, and 32 labour rooms for 1,260 criminals.

In spite of this there were in 1894, 7,887 men and 775 women who could not be taken in. Thus they had to be left in the houses of detention, or the time of detention for enquiry was counted off the punishment, or solitary confinement was changed into imprisonment in common, etc. Altogether 10,955 men and 1,494 women went through their punishment in an illegal manner in the year named.

In order to facilitate superintendence the prison is often placed on an island or an isolated cliff round the foot of which sentinels keep watch. Ischia, the Ponza Islands, Nisida, Elba, Pozzuoli, Pantelleria, Ustica, Lipari are places of punishment of this kind, and the prisons are often placed in most charming situations. When convenient, those condemned to hard labour are set to quarrying or similar work under close supervision, as in the trachyte quarries near Pozzuoli and the alum

and pumice mines of Lipari. Conspiracies and violent attempts at prison breaking take place continually in these convict prisons. The situation becomes specially dangerous when an earthquake takes place on these volcanic islands, as at those times all the prisoners make efforts to get out of the tottering houses into the open air. Several times it has been necessary (as in 1888 in Ponza) simply to set the people free, in the hope that they would not be able to get far away from the island. In order to render escape more difficult the convicts are dressed in red and their hair is cut in a conspicuous manner, but in consequence of secret connivance and widely spread support on the part of confederates or friends it generally happens that an escaped convict is not retaken for a long time, often not till after committing a new crime.

The supervision of prisoners who are let out under condition of being subject to police control is thoroughly unsatisfactory. These people are called "*ammoniti*," and are to be found in great numbers in Naples, Rome, Sardinia and Sicily. In spite of nominal supervision they disappear when they like, or belong to the secret society of the Camorra and play a leading part in all scenes of disorder. A single police constable is powerless to deal with these men, capable as they are of any deed of violence, and he has to take heed, as otherwise he may be taught his duty by a dagger or revolver. He consequently looks another way when the Camorrists raise contributions from shopkeepers, cabmen or porters and they are left in peace and allowed to carry on their business unmolested.

These iniquitous secret societies which raise blackmail for any object whatever are no new phenomenon in Italy. In the days of absolutist oppression all liberals belonged to these alliances, to which for the time they gave a nobler direction, that of striving for the improvement of the whole community. The Carbonari of the beginning of the nineteenth century are famous; they were originally a company of charcoal burners, but afterwards they became a political party with many ramifications and much dreaded; even Napoleon III belonged to them before he ascended the throne. The Camorrists were of a similar nature, and it was to their machinations that the rapid victory of Garibaldi in Southern Italy was chiefly due. At present the Camorra, whose headquarters are in Naples, has sunk into a criminal society. The Mafia in Sicily acts in the same way; it strives by all means in its power, even with threats and daggers, to obtain the appointment of its members to remunerative private appointments. Stewardships of landed estates, and agencies of many kinds get thus into the hands of very dubious individuals and hence arises to some extent the evil economical condition of the Sicilian peasants. The

most recent secret society on the island is that of the "Fasci," whose doings would have led to a revolution in 1893 and 1894 had not Crispi put down the movement with energy at the last moment. For, springing originally from social grievances and nourished by France, this society had adopted as the gist of its programme the wish for the separation of the island from the kingdom, as a more or less independent republic.

To this chapter about secret societies and their extortions belongs the subject of brigandage. This is an ancient trouble that has never been rooted out, and has at different times assumed threatening dimensions. The great brigands with their changing fortunes and their unsettled life are considered as heroes by all the people who take a lively interest in all that is romantic. Even in Germany the robber tales, *Rinaldo Rinaldini*, by Vulpius, and *Aballino, the Great Bandit*, by Zschokke, have met with eager applause and the heroes were said to have lived in Italy, the classic land of bandits. In the eighteenth century a certain Angelo Duca called Angiolillo (1734-84) made Southern Italy insecure with his band of robbers, dwelling chiefly in the almost inaccessible mountains of the Salerno region, and extending his operations as far as Monte Vulture in the Basilicata, but was finally taken at Muro Lucano and hanged in Salerno. Together with many cruelties committed against the nobility, he showed traits of generosity to the poor, so that his deeds and adventures live to-day, embellished like fairy tales, in the mouths of the people. After 1860 brigandage became a veritable plague, when restless men discontented with the new arrangements fortified themselves in the mountains and harassed the surrounding country with plundering and extortion. The robbers found shelter especially in the Papal States, as the clergy, hostile to the unified State, furnished them with all possible assistance in the way of letting them alone and pretending to see nothing, in order to throw discredit on the new government. At that time the robber bands offered regular battle to the gendarmes and soldiers, till at last they were defeated. Strict observance of religious ceremonies and piety, or rather superstition in the garb of piety are the characteristic signs of the Italian robbers, who believe that they will thus keep their good luck. Seizing and holding to ransom occurs at present only very occasionally in Latium and Southern Italy, somewhat more frequently in Sicily and Sardinia. Foreigners are in general tolerably secure, as in the first place the brigands do not know for certain whether the booty is likely to repay them and secondly the interference of a foreign power causes them to be more vigorously pursued. Native landowners in good circumstances, farmers and manufacturers who pass for being rich are again and again carried off and held to ransom. In the last ten years incidents of this kind have taken place in Apulia, in Calabria,

in the sulphur producing districts of Sicily and in Sardinia.<sup>7</sup> Near Girgenti a rich farmer was carried off by brigands and when the gendarmes were too close at their heels they burned him alive in a sulphur mine in revenge for the pursuit. Now as the poor are intimately allied with the brigands, there exists in Sicily, at Girgenti, at Favara, at Racalmuto an embittered feud between the people and the carabinieri, all the more severe as the latter do not belong to the island but are taken from Northern Italy for the security of the service. This feud has lasted for years and, according to the stories told, it has often been carried on with refined cruelty. To avoid surprises of this kind the well-to-do people, as we have remarked before, never go about in the country without arms, and as it is well known that every one in Sicily carries a revolver, or at least it is expected that he has one, attacks in the streets of the towns are not among the more frequent crimes, in spite of the inefficiency of the police.

Burglary is more rare in proportion in Southern Italy than elsewhere, for the houses are usually either watched by porters or secured by huge bolts and locks as well as strong doors. Windows through which it might be possible to get in are closed inside with shutters and made safe during the absence of the proprietor. If crimes of this kind do occur it is usual to presume connivance on the part of one of the household, and the police generally get a clue to the thief by cross-examination. The booty secured in a robbery of this kind is often of considerable value, as, especially in small towns, people do not place their money in the bank but keep it at home in specie, or the smaller artisans and women invest their wages or their savings in all kinds of ornaments (rings, brooches, earrings, chains, etc.).

For some years there was a band of house-breakers in Naples who made use of the subterranean, abandoned and sometimes forgotten cloacæ, aqueducts and medieval quarries, from which they would break through into the shops above. Pursuit in the slippery dark labyrinth was well nigh impossible, until the worthy company happened to be caught through an accident, and the secret passages leading to the subterranean chambers were closed.

Coining silver money and bank note forging are much commoner in Italy than in Germany. So long as the system of small States with their different kinds of money lasted, this business flourished in an extraordinary manner and the States of the Church were the haunt of the coiner. But even the present silver coins, the half lire, lire, and two-lire pieces are so badly stamped, and so worn, that imitations are easily made. It is worst of all with the paper money, for one is never sure of holding valid notes in one's hand, so numerous are the false notes in circulation, and every note has to be examined before it

is accepted. These examinations are frequent at the railways and post offices and give rise to troublesome altercations. The notes remain far too long in circulation and are consequently torn, stuck together again and dirty, and it is easy to conceal forgeries. But even in the case of new issues, imitations immediately make their appearance; it is well known that in 1893 when, in order to remedy the want of small change, £1,200,000 worth of one and two-lire notes were issued, there appeared almost simultaneously with the genuine notes a number of false ones which could only be distinguished by slight, almost unnoticeable, flaws. But that even great banks should have practised such forgeries was and remains an unexampled scandal. Senator Tanlongo, Director of the Banca Romana, who had uncovered bills of exchange out, to the amount of £2,400,000, met these with notes struck off in England with the numbers of notes already issued, and the law-suit commenced on the subject was never brought to a decision, thanks to political intrigues.

The Minister of Justice, in addition to the administration of justice, has, in conjunction with the Minister of the Interior, to see after the proper keeping up of the Registry of Births, Marriages and Deaths. Civil marriages have to take place according to Italian law before the Mayor or his substitute. After this the ecclesiastical marriage ought to take place, as in Germany. In very many cases the couple content themselves, however, with the blessing of the Church and do without the civil marriage, or allow this to take place only afterwards if it is necessary for the inheritance of property. This holds not only of the common people, who consider the sanction of the Church quite sufficient for a union, but even of many officials and still more of the officers, who are subject to certain limitations as to marriage. These people are treated officially as unmarried and have thus no claim to a pension for their wives and children, so that these undefined conditions produce a truly evil position. Endeavours have been often made to improve this, but it will be found very difficult to deal with. Complaints as to these irregular marriages in all classes of the population and as to the opposition of the clergy to the obligation of the civil ceremony, have recurred regularly for years past in all the reports of the Public Prosecutors to the Minister of Justice, but no remedy has as yet been found.

1 The same holds of the question of Divorce, which is not permitted by Italian law, and which has been introduced again and again into the Chamber. Until now there has been only separation of bed and board in consonance with the declaration of the Church that the sacrament of marriage is indissoluble. This separation is pronounced by the Courts of Appeal, and amounted in 1890 to 2,122, in 1891 to 2,230,

in 1892 to 2,277 cases, more than half on the complaint or application of the wife, chiefly on account of unfaithfulness and desertion. Accordingly, about one per cent. of the marriages are followed by separation, a number which would be considerably higher if the irregular unions, which of course are broken off quietly, were counted in.

#### 4. FINANCE

From any Stock Exchange list of prices in one of the larger German newspapers, if we look closely into the expressions used, we can learn how influential a part the Italians once played in the money markets of the world. As in the goods trade, the words *netto*, *brutto*, *tara* are still current, so in banking matters the words *agio*, *bankerott*, *Lombard-Verkehr*, *giroconto*, etc., are still used in Germany. These were introduced and established by the merchants of Northern Italy, who, when trade with the Levant was flourishing, ruled the money market, carried on exchange of moneys, and made loans on merchandise at the same time. There was no market without its benches of money changers, and if one of these failed to meet his liabilities, his bench was broken up. The Lombard merchants perfected the system of lending money upon goods which is called after them, and the Venetians originated bills of exchange and the laws relating to them. The Medici worked themselves into a supreme position as bankers, and the Bank of St. George at Genoa or St. Mark at Venice may be looked upon as holding the position of a Great Power in the estimation of the time. The Crusaders of the Fourth Crusade had to conquer the Byzantine Empire before they could repay the money borrowed from the Venetians, and even Maximilian I and Charles V found that the power of Venetian gold could be effectively used to their disadvantage.

The Italians of the present day have inherited the old aptitude of their ancestors for all kinds of money business, and they give this quality free development. The number of banks and joint stock companies for all possible and impossible objects is astonishing, and it is also astonishing that many more of these do not become bankrupt through corrupt proceedings and that even greater evils do not arise from them. More of this later.

The confusion of the coinage which prevailed in the country before 1870, partly in consequence of the many different kinds of coin, partly in consequence of the repeated debasement of the coinage carried on by the different states and the forgeries connected with it, has happily been remedied. Italy belongs to the Latin Coinage Convention, and stamps its money according to its standard. The

unit is the lira, equal in value to a franc, and there are gold coins of 20 and 10 lire, but these have not been extensively coined since 1890, and are rarely used in trade. There are also silver coins of 5, 2, 1 and  $\frac{1}{2}$  lire, the issues of which before 1862 are no longer current, and have been nearly all called in. Copper coins of 10, 5, 2 and 1 centesimi are in use as small change, and, in fact, constitute the principal medium of exchange in the country, being indispensable for trade, so that public places are established by the State in all the larger towns to supply small change. Recently nickel coins of the value of 20 centesimi have been put in circulation as the demand for change had increased, but silver money was hoarded as much as possible.

The newly coined gold had an average annual value of £28,000 from 1891-1893; silver was issued in 1888 for 33 $\frac{1}{2}$  million lire (£1,320,000), in 1894 and 1895 there were 19 millions of nickel coins (£760,000), and in each of the years 1893 and 1894 3.6 millions of copper (£144,000). The copper coins still date chiefly from the years 1862-70; and their collective value is 76.2 million lire (£3,048,000).

Besides coin, there are notes for all larger sums, 5, 10, 20, 25, 50 and 100 lire. Those issued by the banks with State permission are guaranteed, and serve to diminish the pressure on the State treasure as well as to protect the reserve of bullion. In this connexion there is a curious thing in Italy, the country which, besides the excess of imports, has continually to pay money abroad as interest on its heavy debt. When the rate of exchange rises above a certain point, the coin in circulation, especially small silver, goes abroad in large quantities, and almost entirely disappears from the country. For this reason it has been decided to levy all taxes in gold, not paper, and an official rate is fixed every week, and, on the other hand, some 30 million lire are stored up in silver money to serve as security for the smaller notes of 1 and 2 francs, so that at the present time silver coin is a rarity and has almost disappeared from trade. The colony on the Red Sea has its special coin, the Æthiopian dollar, some ten millions of which were issued in the years from 1890 to 1896.

The control of national finance is divided between the Ministry of Finance and the Treasury. The Minister of Finance superintends the collectors of rates and taxes, the Crown lands, the State monopolies, and the registry of estates. Accordingly he receives rates, taxes, rents of crown lands, the proceeds of the confiscated church lands, the income from the licences for tobacco, salt, and lotteries, and he superintends the manufacture of spirits and explosives. Besides the import duties, generally very high, there are land tax, stamp duties, and duties on different businesses, on gas and on electricity. The tax on movable property (*ricchezza mobile*) amounts at times to

14 per cent., and this tax is also deducted from all official stipends and from the interest on the National debt. In the financial year 1897-8 the State received :—

Land tax . . . . .	£4,260,400
Tax on Buildings . . . . .	3,540,000
Tax on movable property . . . . .	11,508,240
Succession duty . . . . .	1,500,000
Registration fees . . . . .	2,320,000
Stamp duty . . . . .	2,740,000
Banks, etc. . . . .	420,000
Duty on mortgages . . . . .	292,000
Duty on railway receipts . . . . .	784,680
Customs duties . . . . .	9,760,000
Public house licenses . . . . .	2,074,600
Tobacco monopoly . . . . .	7,520,000
Salt monopoly . . . . .	30,480,000
Taxes on manufacture of powder, sugar, spirits, etc. . . . .	1,820,000
Lotteries . . . . .	2,620,000

In Italy everything possible is taxed, and indeed almost everything is overburdened with imposts, so that the country groans under an intolerable load of taxation. Owing to this all kinds of evasion are of course of daily occurrence. Contracts and other agreements are made by words of mouth in order to save the stamp, or people agree to give smaller sums and to make up the difference by bills of exchange. In the case of duties on successions and manufactures, incorrect information is constantly given, to the prejudice of the exchequer. The Italian finds a certain pleasure in this, looking upon it as a kind of sport, to cheat the custom-house officers and tax collectors, and the existing courts of justice would be far from sufficient if all these defalcations were to be prosecuted. Every one knows that it is done, and if the matter is not carried too far, they shut their eyes, in accordance with the proverbial precept : Live and let live.

For this reason the productive element of the nation, which is got at in Germany by the progressive income tax, under valuation by the taxpayer, and by the property tax, is burdened in Italy far below its capabilities. The tax on public-houses, the customs duties, the salt monopoly, the lotteries, the imposts on the soil, fall in chief measure upon the poorer classes and the officials. With a somewhat more general amount of honesty, and a progressive income tax, the lot of the smaller people might doubtless be alleviated and at the same time industry might, without diminishing the income of the State, be freed from the chains which now cripple it with numberless exactions. An oppressive system of taxation is an ancient historical disease in Italy. Any one who examines the time of the Spanish rule, or even that of the Bourbons, will find the same complaints,

the same unconscionable imposts, and the same reactions against the many forms of "gabelle," leading to risings or brigandage, as was experienced in the nineteenth century, the latest instances being in 1894 and 1898.

The chief part of the income of the State is used to meet the expense of the army and navy and in paying the interest of the enormous National Debt. This debt arose partly from taking over the debts of the new provinces, partly from the cost of constructing roads and railways, as well as from the deficiency caused by a series of bad harvests and by the colonization in Africa. Everything connected with the payments and debts of the State belongs to the Minister of the Treasury, to whom is also allotted the keeping of the national accounts. After 1870 the Italian national debt had been gradually reduced until the beginning of the eighties. Since then the indebtedness has stood in consequence of new loans at—

£394,000,000	in 1883
368,520,000	„ 1886
403,120,000	„ 1890
378,160,000	„ 1893
412,480,000	„ 1896

In the budget of 1897-8 nearly £32,000,000 were set aside for interest and floating debt (£4,640,000), in 1883-4 only £17,800,000 for interest, so that, in spite of a lower rate of interest and a conversion that took place in the interval, the country has heavy burdens to bear. Much of the more recent loans has been taken up abroad, as the home market refused them, and for a long time the revenue has been rising in a manner to inspire confidence. In consequence of false political economy, the premium on gold has risen, and as the interest to foreign creditors has to be paid in specie, this has been steadily flowing away for years, till on the one hand a control of the actual paper in circulation had to be instituted by the Italian consuls, thus putting an end to the customary system of cheating by means of coupons, and on the other hand the payment of the taxes in gold has given the State the opportunity of keeping up its reserve. Since 1888 Italy has been more than once at the point of bankruptcy, which was only staved off by various manipulations and a quite unjustifiable taxation of the interest on the public funds.

The superintendence of the banking institutions entrusted with the issue of paper money is another of the duties of the Minister of the Treasury. There is no regular State bank, but the Banca Nazionale del Regno d' Italia, the Banco di Napoli, the Banca Nazionale Toscana, the Banca Toscana di Credito, and the Banco di Sicilia have the right of putting bank notes into circulation to an extent strictly

prescribed by law and covered by reserve of bullion. Until the time of the disgraceful fraud with the double issue of notes, the Banca Romana was also in possession of this privilege, but it subsequently suspended payment, and was then consolidated with the Banca Nazionale into the Banca d' Italia. The nominal capital of this last institution amounted at first to £12,000,000, but was gradually reduced to £9,600,000, of which only £6,800,000 is paid up.

It is a very peculiar regulation that the Banco di Napoli and Banco di Sicilia, which arose from old endowments, can only spend the net income derived from the banking business on objects of general use or beneficence. A number of hospitals, institutions for the blind and for the deaf and dumb, orphan schools, and similar institutions, are thus assisted or maintained. But these sums of money belonging to nobody are of course objects of general desire, to which satisfaction is often given through family influence on the board of directors, etc. These two banks also take upon themselves, as their duty prescribes, to further the industrial undertakings of the country, partly directly, partly through their branches in the different towns. The consequence is only too frequently that they are burdened with shares, both ordinary and preference, of little or no value, on which they have advanced capital. In reading the monthly reports, we again and again come across the accounts, often with high figures, of some suffering (*sofferenti*) company, and pecuniary embarrassment has repeatedly become so noticeable that the State has had to restore the institutions to a healthy condition with a strong hand, by dismissing the director and board of management. Fortunately, the two banks are so well secured by their extensive landed possessions and mortgages as to be able to withstand some shocks from competition or defalcation. The Banco di Napoli has property to the amount of £2,600,000, the Bank of Sicily, £480,000.

The Building Societies are almost a public calamity. These initiated vast undertakings, first in Florence and subsequently in Naples and Rome; then, as a rule, they stuck fast in the middle of their work from want of money or other causes, vegetated for a while in a miserable manner, and only kept themselves going by various kinds of mutual assistance. The hideous new quarter near the railway station at Naples, on the Vomero at the same town, and in the Campus Martius at Rome, are the best proofs of the results of carrying on business in this manner. The same holds of the land speculations in the country, many schemes for conveying water, for drainage, etc. Societies are founded for this or that object with insufficient capital, then after successful speculation with their shares they fail, as soon as the founders have made their own profit.

The pawnbroking establishments of the large towns are under State or municipal superintendence, so that the usury is somewhat checked, though it still flourishes in country places. Many of these "Monti di Pietà," have their origin, as the name indicates, in charitable institutions of earlier times, and were originally not worked for profit. Finally, the Treasury has to do with the Post Office Savings Bank, the loan and deposit offices, and the whole pension scheme.

### 5. MODES OF TRANSIT

The construction of railways in Italy began in 1839, and it was the much abused Bourbons of Naples who commenced the first line of railway, with the sole object, it is true, of obtaining safe and rapid communication between Naples and their country estates in Portici. The railway from Naples to Portici was opened on October 4, 1839, and continued to Torre Annunziata in 1844. A year earlier a second line, connecting Naples with the Palace of Caserta, was put into operation, immediately followed by the railway built by the Austrians from Venice to Verona in order to connect this important harbour with the Quadrilateral, a work, it is true, that lasted seven years, and was not brought to conclusion till 1849. In 1846 the section from Milan to Treviglio was opened, and in 1854 the extension to Verona.

The Revolution of 1848 with its military expeditions in different parts of Italy brought about an interruption in railway construction which lasted nearly three years, while it proved at the same time the importance of this kind of transport in marching and pushing forward troops. From the middle of the fifties the number of lines increased and now it was the kingdom of Sardinia which extended its railways in all directions between 1853 and 1859. At the same time a railway was constructed from Pavia to Bologna, which by 1864 was extended by way of Ancona to Foggia. In 1859 the States of the Church decided to connect Rome with Civitavecchia by means of a line of railway.

After the events of 1860, one of the chief duties of the young kingdom was to bind together the distant provinces, separated from one another by the States of the Church, and to give life to trade and intercourse in the newly-acquired south. After many difficulties, the Pope gave his assent to the lines from Rome to Naples (1861-3), and from Rome to Florence, via Perugia (1862-6), and simultaneously the first Apennine railway (1862-4) was made from Bologna to Florence. This involved great expense on account of the numerous landslips. But as in order to come from Northern Italy to Naples it was necessary to traverse foreign territory, a second line was built across the mountains between Foggia and Naples, by way of Beneventum.

The friendly relations then existing between France and Italy led

to the plan of crossing the Alps. The construction of the Mont Cenis Tunnel, 13,380 yards long, was at that time an astounding undertaking, and this first railway through the Alps has been the model for similar constructions in all parts of the world. The tunnel was built by French and Italian engineers between 1861 and 1870 at a cost of £3,000,000, and in 1871 the railway was opened from Turin to Lyons. While this undertaking was in progress, Italy made an agreement with Switzerland and the North German Confederation for passing under Mont St. Gothard, by means of a tunnel nearly eight miles in length. This cost £9,520,000, and took ten years (1872-82) to build in consequence of the greater difficulties in the approach, but the enormous traffic and the large takings of this line have recently given rise to a plan for a third tunnel under the Simplon, which is to supply Italy with a line for imports from England and the north of France.

After the incorporation of the States of the Church with the kingdom the railway from Genoa to Spezia came into existence, after having to cope with many difficulties in consequence of the narrowness of the strip of land on the coast and its frequent interruption by spurs of the mountain. Northern Italy thus gained a third line of communication with the south (1874), and this was joined to the remaining network of lines by the railways from Tarentum to Reggio, from Metaponto to Naples and from Foggia to Lecce. The line from Salerno to Reggio along the Tyrrhenian coast completed within the last ten years is the last great route and completes the network of main lines. As mentioned above these main lines run chiefly along the coasts and are thus liable to attack in time of war, and consequently a number of parallel and connecting lines further inland were made in the eighties, which have assisted greatly in opening up the country.

The first railway in Sicily was made in 1864 from Palermo to Termini, that from Messina to Catania in 1866-7, from Termini to Girgenti in 1874, from Catania to Rocca Palumba, 1870-81, so that by that date the chief towns were able to communicate together, though often, it is true, only by making great circuits. The South of Sicily Railway was not opened till 1892.

Sardinia was still later in getting railways, as the first railway on the island, that from Cagliari to Oristano, was begun in 1871 and opened in 1872. There are now lines from Oristano to Terranova (1880-81), and from Sassari to Ozieri (1887-93).

The numbers of miles open in the years named below were as follows :

1839	5	1852	435	1861	8,227
1840	13	1859	1,263	1863	9,065
1842	34	1869	3,660	1866	9,065
1849	341	1879	5,026	1897	9,874
1851	370				

These numbers prove how anxious the Government and the Parliament have been to give assistance to the newly-acquired lands by means of trade. Up to 1883, £114,080,000 had been spent on railways including the sums laid down for the purchase of the private lines in Northern Italy and Tuscany. But, of course, many mistakes were made, many railways were constructed or purchased which pay very little, and might well have waited, if the representatives had not been obliged to press that they should be made for the sake of their constituents, for all towns have for a long time past desired to have railways, and if possible with two lines of rail. These multitudinous demands, with the bad financial position of the eighties and the small profit derived from many lines, have obliged the Government in some cases to mortgage the railways and hand over the management to private companies in exchange for a certain fixed guarantee.

At the present time, besides a few smaller ones, four great companies hold in their hands the whole railway system, so that there are four great networks of railways, the Rete Adriatica and Rete Mediterranea on the mainland, the Rete delle ferrovie Sicule and Sarde in Sicily and Sardinia. The lines were leased in 1880 for sixty years, and the contracts provide that for the mainland lines  $27\frac{1}{2}$  per cent. of the gross revenue comes to the State, 10 per cent. to the Reserve Fund, and  $62\frac{1}{2}$  per cent. to the companies for managing the lines. The railways remain the property of the State, which contributes a part of the cost of construction, while the other part is raised by the joint stock companies by the issue of bonds. The lines which have been paid for by the revenue from working and not by the State, as well as the bonds, may be bought up after an appointed period, and in case of war the control over all the railways and their working comes into the hands of the Government. Foreign capital, especially French, has taken a chief part in these railway undertakings, but the banks and smaller capitalists of Germany hold bonds and thus have an important interest in their development.

The revenue derived by the State from the railways amounted in the budget of 1897-8 to £3,080,000, the payments for interest on the bonds nearly to £1,400,000 quite irrespective of the interest and premiums connected with the purchase of the private lines in the seventies, the liabilities of which, of course, passed over to a certain extent to the purchasers.

These railways were especially those in Piedmont, Venetia and Tuscany, and for these there remains to be paid as interest and sinking fund an annual sum of some £600,000, so that the surplus frequently stands in no proportion to the capital expended, and has never once amounted to £1,200,000. The earlier of these liabilities will cease in

the middle of the twentieth century, the most recent not till 1985. The same budget, that of 1897-8, enters among the payments of the Treasury a sum of £3,160,000 as floating debt to the railway companies. If the profits of the railways which come into the pockets of the companies were not subjected to a tax of £780,000, there would be nothing over for the State from this branch of the administration.

The gauge, for the sake of international traffic, is that of the railways of Central and Western Europe, so that goods can pass over from foreign railways and a through traffic with a rapid train service is rendered possible. With the increase that has taken place in the demand on the part of Italy there has been a corresponding increase of through train services, and among these we may mention that from Paris and Vienna to Rome, that from Berlin to Naples, and that from Ostend to Brindisi.

In this complicated state of affairs between the State as proprietor and the companies as managers, the Italian railways are in many ways behind those of other countries. The laying of a second line of rails even on so much used a railway as that between Rome and Naples has only recently been carried out. Most of the stations are antiquated and scarcely suffice for what is required; they are dark, dirty, and have no proper waiting rooms. Originally constructed to suit a small traffic they have to remain as they are because the companies who lease the lines have no interest in adornments or conveniences for the public, while the State in its everlasting scarcity of money is unable to find the means for them.

The punctuality of the service also leaves much to be desired. It is an everyday occurrence for through express trains to arrive several hours late, so that it is quite a matter of surprise if once in a way the train arrives at the right time. This arises in part from the fact that many of the railways have only a single line of rails, partly from the characteristic traits of all Italian management, which attaches no special value to time. This slowness and caution at any rate prevents accidents, and travelling on Italian railways is generally safe. The officials who are dependent on the companies receive somewhat scanty pay, and Germans often miss the precision and neat appearance to which they are accustomed at home. Everything is to be had for a tip, however impossible it may have appeared at first. The insecurity of passengers' luggage is very bad, and of this complaints are constantly being made that articles of dress and objects of value have disappeared from the boxes.

In general appearance and the arrangements of the passenger traffic, in the clipping of tickets when going on to the platform, and in taking them on leaving the station, in the shape and narrowness of

the carriages, the railways approach the French pattern. There is a stamp of a halfpenny on every railway ticket issued.

Side by side with railways, the network of roads has had a wonderfully rapid development. Most of the towns are now connected by a commodious road fit for carriages, and this was attended with much difficulty owing to the lofty situation of many towns and villages. The most important highways were made and are maintained by the State, the byways are constructed and kept up by the Province with the help of a State subsidy. But we have already repeatedly observed that the traffic in mountain districts has not yet accustomed itself to these new roads, but constantly takes the old steep but shorter mule paths, as the people do not drive much, but ride and convey their goods on asses or mules.

Where the ascent is too steep and heavy loads such as manure, wood, etc., have nevertheless to be carried up, they generally make use of sledges drawn by oxen. This peculiar mode of transport is called in Tuscany “*treggia*,” and is occasionally used even for conveying people. On the roads they use carts with two high wheels, one horse or mule goes in the shafts, and at the side of the shafts other draught animals are harnessed as required, so that sometimes a horse, a donkey, and an ox may be seen drawing the same cart. The harness of the horse in the middle has brass decorations, and is ornamented with pictures or little flags, and even the other animals are often dressed out in colours. In Sicily these carts are often painted with various pictorial representations, generally four in number, while wheels and shafts are painted of many colours. Scenes from Sicilian or recent Italian history are special favourites.

These carts also serve to carry persons from one village or town to another, and are provided inside sometimes with benches, sometimes with chairs. They are often overloaded with people. In Resina, Portici and Torre del Greco, at the foot of Vesuvius, vehicles may be met with carrying twenty or more persons, jolting along at a rapid pace over the uneven ground, and constantly bringing the individuals they carry into danger of falling down if they do not hold tight. This *person-post* is cheap, it is true, but it is as uncomfortable and dirty as it is cheap.

Many of the highways, like many of the railways, owe their existence to electoral intrigues, or brief-hunting, and cause unnecessary expense of maintenance, especially in the Apennines, where the landslips often occur in the spring, bringing the roadway with the supporting walls down the hillsides. As in the case of the railways, many of the roads have been made, leaving political motives out of consideration, solely with the object of creating trade and traffic, and not with that of

supporting and increasing those already in existence ; this constitutes a promissory note on the future which the country will certainly meet in a brilliant way so soon as the oppressive taxation under which it suffers at present is removed.

On the roads, or beside them, there have been constructed since 1878 a multitude of tramways, especially steam tramways, and in this kind of traffic Germany has been far surpassed by Italy. Northern Italy (Piedmont and Lombardy) is covered with a network of these narrow-gauge lines, which are much used and greatly facilitate the transit of goods and passengers. In the larger valleys of the Alps, too, they are making way and have had no small share in the development of manufactures. In Campania the number of tramways has been on the increase for the last ten years in spite of the additional railways, and the barrenness of the Campagna is the sole cause of there being only two tramways in the environs of Rome. These tramways are worked by joint stock companies, chiefly founded by foreign capital, so that unfortunately, in spite of high duties and other imposts, a considerable part of the profit goes abroad, as in the case of the railways.

## SUMMARY OF TRAMWAYS (1891)

	Lines	Miles
Piedmont . . . . .	44	529
Lombardy . . . . .	40	598
Venice . . . . .	10	132
Emilia . . . . .	10	149
Tuscany . . . . .	11	66
Rome . . . . .	2	19
Campania . . . . .	5	28

Making, with one each in Apulia and Sicily, a total of 122 lines with 1,521 miles of rail. In 1895 there were 1,782 miles.

It is scarcely necessary to mention that the larger towns possess tramcars within their walls drawn by horses, steam or electricity. The cheapness of beasts of burden, owing to the extensive raising of mules, causes these to be often worked by animal labour, as in Naples. In many cases the narrow streets crowded with carriages and people, do not admit of the erection of posts for conveying electricity, and the steepness of the streets does not allow of the working either by electricity or steam, without special contrivances for overcoming the difficulties of the ascent. In Naples cable trams have been constructed for this purpose from the lower town to the more elevated quarters, and Orvieto is connected in a similar way with the railway station 600 feet below. Another cable tram goes to the Cinder Cone of Vesuvius, in order to avoid the toilsome ascent on the loose *rapilli*,

and a similar line has been made from Turin to Superga, to enable visitors to see the famous cathedral with its glorious view over the Alps and the plain of Piedmont. Mineral trams transport marble from the quarries of Carrara to the sea, and there are others at Monteponi and Iglesias in Sardinia, and also at Montepoli in Tuscany.

Railway matters belong to the department of Public Works, as well as streets, canals, and harbours. The cost of this branch of administration amounted to £1,040,000 ordinary, and £2,040,000 extraordinary expenditure in the Budget of 1897-8. Of this £50,000 was for expenses of management, and £840,000 for building new railways and paying off the debt to the companies for lines already constructed. Roads, harbours, and canals show £940,000 under the head of ordinary, and £832,000 under that of extraordinary expenditure, a portion of the expense for roads falling on the Provinces, as remarked above.

The country has not many navigable waterways, only in fact the Po and its larger tributaries with the canals appertaining to them. It is true that small boats come up the Arno, the Tiber and the Volturno, but the passage is greatly impeded by variations in the depth of the water, and by sandbanks. Pisa and Florence are of no importance as seaports, and the import of provisions from Capua up the Volturno, which was of great importance for Naples at the time of Masaniello's rising in 1647, has entirely ceased.

There are altogether 962 miles of navigable rivers and 659 miles of canals. The Canale Cavour is the most important of these, as it connects Turin and the Upper Po with the Ticino, and this, by means of its continuation the Naviglio Grande, with Milan. The Canale Muzza, with a branch to Milan, reaches as far as the Lower Adda. This canal, as well as the Ticino, permits the passage of small steamers or boats of some forty-five and thirty-six tons burden respectively without great difficulty.

The construction of canals in Piedmont was greatly promoted by Cavour, and has since been carried further. The costs of construction were so considerable that even now after fifty years the State has still to pay £900,000 a year as interest and sinking fund on the loans then contracted, and these will not be paid off till 1915. A greater extension of the canal system seems to be excluded by the topographical conditions, and Italy has so many coast railways and harbours that goods can easily be conveyed into the interior.

The post office and telegraphs are in the department of a special minister. Telegraphy and the transmission of letters are, as in Germany, a monopoly of the State and bring in some millions of lire net profit every year. The whole cost of the service during the last

financial year amounted to £2,256,000, the returns to £2,652,000. Special figures as to the number of letters and telegrams, and as to the development of the postal system in modern Italy are appended at the end of this section. Italy, of course, belongs to the Universal Postal Union, and is an important part of the route of the English post to India, Brindisi being its last European harbour.

But even in the country there has been great improvement in the transmission of news and letters. In every town, and frequently even in the "*Sezioni*" of the communes there is a post office where letters are sent off and received every day, or at best, every other day. In the mountains the carriage of mails and persons is in the hands of private individuals, who receive a subsidy from the administration. As most of the smaller towns are difficult to get at from the railways, or have no railway in their neighbourhood, the traveller who desires to proceed further is often taken on alone on the mail waggon. These vehicles, however, leave much to be desired in cleanliness and accommodation. The horses are over-driven and badly fed, the interior is dirty, the windows insufficient and frequently of wood instead of glass, and though these can, it is true, be let down, they have for the most part to be drawn up on account of the dust.

The officials are in general obliging, but not always trustworthy. If important packages, especially packages containing money are to be forwarded, or if a proprietor has a large payment to make and takes the money with him in person, a couple of *Carabinieri* are put on the box to accompany the mail cart. Attacks on mail carts have, it is true, decreased, but in spite of that, people who travel in these post vehicles in Southern Italy do not feel secure. In the severe winter of 1892 some mail carts were even attacked by wolves, an occurrence which could hardly take place in any other part of Europe except Russia.

The forwarding of money orders and articles of value is still very cumbrous, the former having to be put in an envelope in the station, then sewn up and stamped with the seal of the station. Postal orders are much more convenient, they are used for the payment of small sums such as prepayments for newspapers, etc. There are savings' banks connected with the post office, the organization and management of which are similar to those in Germany, namely with books containing marks for affixing the stamps to. Besides supplying the railway service and the weather telegrams, the telegraphs have the duty of serving the meteorological and seismic stations. The islands are connected by cable with the mainland, thus the Ponza Islands are connected with Cape Circeo by a cable through Ponza, Stromboli via Lipari and Volcano with Milazzo in Sicily, Ustica with Palermo, Pantelleria with Mazzara, and the south-eastern corner of Sicily by two cables

with Malta. A line of telegraph runs from Palermo to Naples, another from the north-east of Sardinia to Monte Argentario, and one from Cape Corse in Corsica to Leghorn.

What still requires development in Italy is the parcel post, in which there is a very narrow limit as to size, all that exceeds that amount having to be sent by goods train. Besides this, it is very inconvenient for foreign traffic, that the custom house officials at the frontier open every package, and impress the Government seal before shutting it, thus causing considerable delay and risk. At times of heavy traffic, near Christmas for example, there is a frightful block of parcels, which often lie for a week or more at the frontier.

	Post Offices	Letters and Postcards	Printed Papers and Samples	Money Orders	Income	Expenditure
1883	3,609	187,856,020	169,566,540	£ 169,943	£ 1,418,400	£ 1,204,800
1887-8	5,333	225,106,000	179,612,000	236,360	1,759,200	1,498,400
1891-2	5,917	248,625,354	197,552,935	307,576	1,908,000	—
1895	7,272	277,929,000	257,320,000	326,480	2,028,000	2,067,660

1895	Letters (in thousands)	Postcards (in thousands)	Printed Papers and Samples (in thousands)	Letters with Coins, etc.	Post Office Orders
Inland . . .	161,881	63,644	234,835	11,324	£ 65,819
Foreign . . .	37,997	5,733	21,227	784	571
Transit . . .	2,376	296	1,258	2	31

## TELEGRAMS.

	Internal	International	Official	Service	Transit
1880	4,913,397	454,906	309,092	147,140	199,579
1886	7,024,614	686,042	516,510	206,374	280,882
1892	7,456,248	736,416	538,136	231,057	130,261
1895	7,322,703	1,741,517	—	324,489	122,430

## LENGTH OF THE TELEGRAPHS IN MILES

1882	17,242	1890	22,668	1895	24,876
1887	18,108	1893	23,930	1896	26,105

The length of wire was 58,735 miles in 1882

75,095 „ 1896

The receipts amounted to £690,800

The expenses „ 150,800

Distribution of letters and post-cards among the different provinces in percentages :—

Piedmont . . . .	9·03	Rome . . . .	13·43
Liguria . . . .	15·24	Abruzzi . . . .	3·58
Lombardy . . . .	9·15	Campania . . . .	7·05
Venice . . . .	6·55	Apulia . . . .	3·83
Emilia . . . .	5·80	Basilicata . . . .	2·67
Tuscany . . . .	7·84	Calabria . . . .	3·18
Marches . . . .	5·59	Sicily . . . .	4·14
Umbria . . . .	4·87	Sardinia . . . .	3·81 <sup>1</sup>

## 6. EDUCATION

The whole education of the country is under the superintendence of the Minister of Public Instruction. There is no Kultus-Minister in the Prussian sense. The negotiations with the sovereign Catholic Church are carried on by the Keeper of the Great Seal, the Minister of Justice. Medical affairs belong to the Minister of the Interior assisted by a *consiglio di sanità*, the Prefects and Sub-Prefects. In the same way there is at the side of the Minister of Education a *consiglio superiore di pubblica istruzione* with some twenty members, partly named by the King, partly chosen by the Faculties of the University. There is also a College of Inspectors (*proveditorato centrale*). Each province has its Inspector (*providitore degli studii*) who exercises supervision over the higher and lower grade schools.

There is compulsory attendance in Italy, but in the southern regions, Sicily, Calabria, Sardinia, and the Apennines, it is very imperfectly carried out, so that although it has lasted thirty years the number of people unable to read is still considerable.

Every one must admit that since 1860 and since the foundation of numerous elementary schools, the knowledge of reading and writing has become far more widely spread, and that, after all the neglect in the Papal and Bourbon States, some improvement has taken place is due on one side to the devotion which shrank from no expense for the improvement of the education of the people, and on the other to the quick apprehension and mental adaptability of the Italians, the wish to read the papers and to take part in politics and elections possibly acting as an incentive. Of the twenty millions of persons over ten years of age in 1871, 64·8 per cent. were unable to read, in 1861 it had been as much as 72 per cent. The lists of recruits in 1881 tell us that Italy has still 47·74 per cent. The registry of marriages in 1882 gives 46·68 for men, 68·90 for women, or 57·45 per cent. of the whole. The female population, in many cases never leaving their native villages and excluded from all public life, shew a higher percentage than the men, and have great need of instruction, as not half of those who marry are able to sign the register.

<sup>1</sup> There seems to be some inaccuracy, as the total amounts to 105·74 per cent.  
(Trans.)

	Province	1896			1895	1894
		Men	Women	Total		
1	Turin . . . . .	4	6	5	5	5
2	Sondrio . . . . .	5	9	7	6	6
3	Como . . . . .	7	9	8	9	9
4	Novara . . . . .	7	11	9	9	9
5	Alessandria . . . . .	8	12	10	11	11
6	Bergamo . . . . .	12	14	13	14	14
7	Cuneo . . . . .	12	16	14	8	14
8	Milan . . . . .	14	17	15	17	16
9	Porto Maurizio . . . . .	9	22	16	15	15
10	Brescia . . . . .	16	17	16	18	20
11	Pavia . . . . .	15	20	18	20	19
12	Belluno . . . . .	10	20	18	19	19
13	Genoa . . . . .	16	23	19	19	21
14	Leghorn . . . . .	16	27	21	22	24
15	Cremona . . . . .	21	27	24	25	27
16	Vicenza . . . . .	16	34	25	26	27
17	Verona . . . . .	19	36	28	29	30
18	Mantua . . . . .	23	35	29	31	31
19	Udine . . . . .	15	45	30	31	32
20	Treviso . . . . .	22	41	31	33	33
21	Bologna . . . . .	28	29	34	34	38
22	Lucca . . . . .	24	45	34	35	36
23	Piacenza . . . . .	38	37	38	38	39
24	Padua . . . . .	31	47	39	41	41
25	Rome . . . . .	29	50	40	39	42
26	Florence . . . . .	31	49	40	41	43
27	Venice . . . . .	34	47	40	42	42
28	Rovigo . . . . .	31	51	41	45	44
29	Reggio Emilia . . . . .	30	51	41	44	43
30	Parma . . . . .	36	49	42	44	46
31	Modena . . . . .	35	51	43	46	46
32	Grosseto . . . . .	36	51	43	46	49
33	Massa e Carrara . . . . .	31	61	46	47	48
34	Pisa . . . . .	30	62	46	46	46
35	Naples . . . . .	40	56	48	49	51
36	Ravenna . . . . .	45	54	50	50	55
37	Ancona . . . . .	40	62	51	52	53
38	Ferrara . . . . .	43	62	52	52	53
39	Aquila degli Abruzzi . . . . .	36	69	53	53	55
40	Palermo . . . . .	45	61	53	56	54
41	Siena . . . . .	43	66	54	55	57
42	Perugia . . . . .	46	70	58	57	61
43	Arezzo . . . . .	45	71	58	58	61
44	Macerata . . . . .	46	73	60	62	60
45	Sassari . . . . .	50	71	61	60	61
46	Forli . . . . .	52	70	61	59	61
47	Pesaro e Urbino . . . . .	53	72	62	62	63
48	Salerno . . . . .	52	74	63	64	65
49	Cagliari . . . . .	50	74	63	20	69
50	Ascoli Piceno . . . . .	51	78	65	63	65
51	Trapani . . . . .	57	73	65	17	66
52	Caserta . . . . .	53	78	65	64	67
53	Messina . . . . .	58	76	67	67	68

Province	1896			1895	1894
	Men	Women	Total		
54 Campobasso . . . . .	53	82	67	70	72
55 Foggia . . . . .	59	76	68	70	72
56 Lecce . . . . .	56	81	68	69	70
57 Chieti . . . . .	56	82	69	72	72
58 Catania . . . . .	62	77	70	72	71
59 Benevento . . . . .	57	86	72	71	72
60 Avellino . . . . .	61	84	72	72	73
61 Bari de Puglie . . . . .	65	79	72	74	75
62 Teramo . . . . .	61	84	72	73	74
63 Caltanissetta . . . . .	67	79	73	74	73
64 Syracuse . . . . .	68	82	74	76	75
65 Potenza . . . . .	68	84	76	77	77
66 Girgenti . . . . .	70	83	76	77	77
67 Reggio di Calabria . . . . .	67	87	77	77	78
68 Catanzaro . . . . .	67	88	77	78	78
69 Cosenza . . . . .	79	87	80	81	80
Whole Kingdom . . . . .	37	53	45	40	47

This absence of elementary education explains the institution of Public Letter Writers. These take their seats in sheltered places accessible to every one, as for instance in the vestibule of the Theatre of San Carlo in Naples, and compose letters of all kinds for those who cannot write, in return for a small payment. There are often people of education among them who have failed in business, and who earn a wretched pittance in this manner.

Popular school education is free, and the expense is borne by the communes with the aid of the State. The total cost amounts to £244,000 of which £220,000 falls upon the communes, so that complaints of the school rates are frequent, and modes are continually being sought for to get rid of this burdensome tax. Every commune ought to have a school for boys and one for girls, with a teacher to every seventy pupils. The larger communes should have a higher elementary school, instruction being only obligatory between the ages of six and nine. But it is quite impossible to carry out this law owing to want of money and insufficiency of teachers, who are miserably paid. Teachers are trained in what are called Normal Schools, some State supported, some of a private character, and of these there were 150 in the country in 1895, with 22,000 scholars, and attendance at one of these and passing an examination bestows the right to teach. For public elementary education there were in 1895, 50,300 schoolrooms and 9,100 classrooms in private schools, holding two millions and a half of children. Of higher schools with

classical curricula there are, besides those of the State, a number of private adventure schools, which are of course subject to government supervision, the pupils obtaining the right of serving for only one year in the army by passing an examination conducted by a government commission. These schools are divided into *Gymnasia* (*ginnasi*)<sup>1</sup> and *Lycées* (*licei*), the first corresponding to the German Progymnasium and the latter to the classes from the *Obersekunda* upwards.

In 1891-2 the numbers of higher schools were—

	SCHOOLS	PUPILS
Gymnasia . . . . .	735	57,525
Lycées . . . . .	321	15,713
Technical Schools . . . . .	399	33,755
Technical Institutes . . . . .	74	8,647
Naval Institutes . . . . .	21	1,020

In the previous year the numbers of schools and pupils were distributed with regard to the mode of maintenance as follows—

	STATE SCHOOLS	PUPILS	PRIVATE SCHOOLS	PUPILS
Gymnasia . . . . .	180	25,698	553	31,059
Lycées . . . . .	113	9,000	109	6,000

The instruction given in these schools is not, of course, free. The curricula correspond to those in Germany nominally, but the carrying out is far inferior, so that when young men go to the university they have scarcely the knowledge of a boy from a German *Obersekunda*.<sup>2</sup> The period of school life is more limited, and the liberty of the scholars as to attendance, obedience and work is very great. The early maturity of Italian boys causes them to be treated as grown up at the age of sixteen, and youths of that age think they have the perfect right to take part in all political affairs. Boys from the lycées and gymnasia get up political demonstrations, hoot the ministers, and are honoured by the deputies with fiery speeches, as being the future rulers of the country, those who are to carry on the national ideas, while such doings would be more suitably treated with the cane. The absence of a strict school training in habits of obedience is the cause of the disorders among the students at the universities and of those of later political life. One reason for this is doubtless the low social position of the teachers in the public schools. They are badly paid, they can be transferred from one post to another at the will of the minister, and altogether they play by no means the same important part as in Germany. In the private schools, constantly increasing number of young ecclesiastics have found posts during the last ten years, and in this way the Church is winning back the secular

<sup>1</sup> The nearest English equivalent for Gymnasium is Grammar School.

<sup>2</sup> This is below the standard for matriculation at London. (Trans.)

schools, and gaining influence over the educated youth of the country. It is the same in France, where the symptoms of increasing clericalism have been of late very marked. In Italy, however, it has not yet gone so far

The education of girls is almost entirely in the hands of the clergy. In the large towns the kindergartens for children under six years old are carried on by school sisters, who also teach in the girls' elementary schools. The young ladies of the better class are sent to convent schools, conducted by nuns, where they are either brought up as boarders, or as day boarders, being taken to and from school morning and evening. The instruction conveyed in these establishments is usually scanty and confined to the most indispensable acquirements.

The system of boarding schools flourishes almost to the same extent as in France, a system which is limited as much as possible in Germany, in order not to withdraw the children from the beneficent influence of family life. From the following small table we see that over 100,000 boys and girls are brought up in 2,300 of these institutions, and thus become estranged from their own people. The male teachers in these schools are for the most part ecclesiastics, who require only small salaries on account of their celibacy, but who cannot, any more than nuns, have the educational influence of parents or brothers and sisters.

## BOARDING SCHOOLS FOR BOYS, 1891-2

	NUMBER	BOARDERS
State. . . . .	39	4,319
Governmental . . . . .	13	1,467
Provincial . . . . .	19	1,413
Municipal . . . . .	70	4,722
Charity . . . . .	236	15,022
Training . . . . .	303	18,486
Private . . . . .	283	14,502
Total . . . . .	963	59,931

## BOARDING SCHOOLS FOR GIRLS, 1891-2

	NUMBER	BOARDERS
State . . . . .	13	865
Provincial . . . . .	23	1,647
Municipal . . . . .	52	2,104
Charity . . . . .	691	25,387
Private . . . . .	632	19,723
Total . . . . .	1,411	49,726

Italy has a large number of higher schools, polytechnics, and technical schools, as well as universities. There are altogether seventeen State universities and four private or "free," distinguished as the First and Second Categories. Not all of these have the complete

number of faculties. The smaller ones are historical survivals, and many attempts have been made to abolish them, but hitherto without effect.

The oldest of the State universities is that of Naples, which was founded by the Emperor Frederic II. in 1224. The other institutions in existence at that time had previously been private charity schools or convent schools. Bologna, Pavia, and Padua especially were in a flourishing condition then and for some time later. On the first of these Frederic Barbarossa, at a diet held in the plain of Roncaglia, conferred certain corporate rights. They were renowned as schools for the study of the law, and are said to have had at one time no less than 13,000, or even according to another account 30,000, students. Foreigners, among whom were many Germans, were allowed to matriculate there, and the matriculation lists are a valuable source for personal history.

The self-government which still exists to some extent in German universities has grown up in those of Italy as well, and science owes to this its free advancement. As the students bring much life and traffic to the towns and render them famous, many places were desirous of possessing universities, and consequently all the more important of them established schools for higher instruction. Most of these came to grief in the course of the nineteenth century, and only twenty-two at present remain. A proposal to diminish even this number was made by Martini in 1893, but unfortunately was not carried.

There is no division of the time of study into semesters, but there is instead the session (*anno scolastico*), of which four are required to qualify in philology, law and natural science, and six in medicine. There is a curriculum for each of these years, the course of lectures to be heard is fixed and an examination must be passed at the close of the session in July. This examination is requisite for permission to commence the next year's course. For those who failed in July and November there used formerly to be an extraordinary examination in the following March, so that the session might not be entirely lost. The refusal of this extra examination, or rather the fear that it might not be held regularly, gave rise to riots among the students in Naples, so that the university had to be closed during the time of the Carnival. As the students of other universities asserted their "solidarity" with their comrades of Naples—a usual thing in Italy even among the pupils of the gymnasia—and scenes of tumult began, in many cases the whole body of students absented themselves, and no one of the Ministers of Education dared to take the measures requisite against this misconduct, especially as some of the representatives

took the part of the strikers and threatened an interpellation in the chamber. It may easily be supposed that regular work is impossible under such circumstances. There are no students' clubs as in Germany, but at each of the larger universities there is an *associazione universitaria*, or students from the same part of the country form what is called a *circolo*, the place of meeting being a café. Change of university during the academical course seldom takes place, and therefore the universities have a markedly provincial stamp, with the exception of that of Naples, which is the one school for higher education in the whole of Southern Italy, and unites elements of different kinds among its students. The vacation lasts from July to November, with a few days at Christmas, the Carnival, Easter and Whitsuntide, but the number of actual lectures is less than in Germany. The examination for the degree corresponding to the German Staatsexam and the examination for the degree of Doctor forms the close of the academic course. For this the candidate, besides an oral examination, has to submit an essay (*tesi*) and various theses (*tesine*), but these are not printed.

It is remarkable how the students throng into law and medicine. The former opens the way to the Bar, and thus to a political career, as nearly all the more important politicians of recent years have been advocates. Besides the lectures which any one can attend, classes for Training (*scuola di magistero*) are held in the Faculties of Philosophy and Natural Science, somewhat similar to the Seminare of the German universities. Theology is not represented in these, as the clergy are educated in clerical seminaries under the direction of the bishops, but a good many theological students attend the *facoltà delle lettere*, to qualify themselves as teachers.

The staff consists of ordinary professors, extraordinary professors, and private teachers, (*Professori pareggiati*), many of whom hold a commission to teach from the university. No college fees are exacted except an entrance fee and examination fees, so that the university teachers are entirely paid by the State. They play a prominent part in public life, and are continually represented in the Chamber of Deputies to the full number allowed by the Constitution. Their position is an independent one, as they are only subject to the minister, and in cases of discipline to the *Consiglio superiore*.

The larger universities are the following:—Turin, Genoa, Pavia, Padua, Bologna, Pisa, Rome, Naples, Palermo, Messina, and Catania. Those of Modena, Parma, Siena, Cagliari, Macerata and Sassari are smaller. The large ones have all four faculties (*di lettere, di scienze naturale e matematiche, di giurisprudenza o di diritto, di medicina*). The smaller ones have either less than the full number of faculties,

or they have only perhaps courses of lectures for first and second years' students. Then there are the free universities of Perugia, Camerino, Urbino, and Ferrara. The *Istituto superiore* in Florence and the *Accademia scientifico-letteraria* at Milan are of the same rank, as are also the veterinary institutes at Turin, Milan and Naples, and the *Scuole di applicazione* at Rome, Bologna, Turin, and Naples. These last, which are engineering and technical schools, are connected with the universities, inasmuch as the Professors of the Faculties of Natural Science deliver lectures in them. Finally, three Lycées, those at Aquila, Bari, and Catanzaro, have courses of lectures of a university character. At the head of each university there is a Rector who holds office for from one to three years, and each faculty has a Dean (*preside*), changed every year.

The whole character of the universities may be described as a mixture of liberty and restraint, ill adapted for the purpose in view. Externally, indeed, they are imitations of the German universities in their divisions, regulations, faculties and the designations of the professors, but the spirit is French, for the course of study is narrowed by regulations, prescribed as to its minute details, and interrupted by intermediate examinations. In the case of all arrangements, such as those concerning admission to the university, dispensation from leaving examinations (*licenza licale*) or from the year's course, which students often get remitted, instructions are sent direct, and the minister and faculties have to decide in accordance with these, though without binding force. There is another difference as compared with Germany, namely that the Professor appointed to hold a course of lectures is not allowed to take a general survey of his subject or to handle it fully, but has to dispose of a prescribed section of the subject in the three lectures a week, so that at the final examination the questions can be set within this narrow circle. The instruction given at the Universities naturally suffers, and still more the scientific training of the students, which can only be described as unsatisfactory.

#### NUMBER OF STUDENTS 1895

##### I. STATE UNIVERSITIES

Bologna . . . .	1,318	Palermo . . . .	1,299
Cagliari . . . .	174	Parma . . . .	313
Catania . . . .	662	Pavia . . . .	1,123
Genoa . . . .	603	Pisa . . . .	742
Macerata . . . .	160	Rome . . . .	1,498
Messina . . . .	353	Sassari . . . .	125
Modena . . . .	346	Siena . . . .	213
Naples . . . .	4,721	Turin . . . .	2,063
Padua . . . .	1,260		
Total. . . . .			17,342

## 2. FREE UNIVERSITIES

Camerino . . . . .	101
Ferrara . . . . .	79
Perugia . . . . .	198
Urbino . . . . .	67

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## 3. LYCEES WITH UNIVERSITY COURSES

Aquila—R. Liceo Cotugno . . . . .	27
Bari—R. Liceo Cirillo . . . . .	45
Catanzaro—R. Liceo Galluppi . . . . .	45

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Besides the universities, the State maintains special schools, such as a school of forestry at Vallombrosa, for agriculture in Portici near Naples, at Pisa and at Milan, three schools of mines in the chief mining districts of Caltanissetta, Agordo and Iglesias, a school for ship-building at Genoa, together with a series of institutes of a lower grade for practical agriculture, handicrafts, music and trade.

## CHAPTER XIV

### The Church and Public Worship

NOMINALLY the population of Italy belongs in largely preponderating numbers to the Roman Catholic Church. Protestants, Waldenses, and Jews are only represented in small numbers, as in the earlier days of strictly Catholic States heretics were oppressed or barely tolerated. At present religious liberty prevails, and there is no State Church (*Chiesa libera in libero stato*).<sup>1</sup>

Rome, and Italy with it, is the centre of the Roman Catholic world. Over the tombs of the Apostles Peter and Paul rises the splendid edifice of St. Peter's, and beside it in the Palace of the Vatican dwells the Pope, the Supreme Head of the Church.

After a contest which lasted fully a thousand years, the Pope lost his temporal authority in September, 1870, and had to look on while sacred Rome was declared the capital of the kingdom of Italy. Under protest and reservation of all rights, he retired to his palace on the hill of the Vatican (called shortly the Vatican), considered himself a prisoner, renewed his ancient claims to the lands of the Church from time to time, and is greeted as the *Papa-re* (Pope-King) during the solemn procession at the Cathedral of St. Peter.

On the incorporation of the States of the Church with the new kingdom a great number of rights were reserved to the Pope, and large revenues allotted to him by special guaranteeing laws (*Legge delle garantigie pontificie*) passed on May 31, 1781, that he may not be impeded in the exercise of his spiritual office as Head of the Church.

The Pope's person is inviolable, and he enjoys the same protection and the same rights in this respect as the King of Italy. He is a sovereign and has the right to the marks of honour connected with that position; he can maintain a guard (from 600 to 1,000 men) in his district who are subject to himself alone, and over whom he has complete jurisdiction. Foreign powers accredit ambassadors and *chargés d'affaires* to him. Italy also undertakes the duty of watching over the external safety of the conclaves and Œcumenical Councils, it permits the Pope to forward letters and telegrams free of charge, stamped with the Papal stamp, and to receive merchandize free of duty. For the confiscated goods of the Church a "Perpetual Rente" of £120,000 is entered in the Budget, which was the sum allotted to the personal expenses of the Pope and his court as well as to the keeping up of the palace and museums under the former States of the Church. To render these concessions acceptable, extraterritoriality has been

<sup>1</sup> Cavour's Maxim. Trans. \

secured to the Vatican or to the palaces where the Pope resides, or where a Conclave or Œcumenical Council assembles.

These laws have never been acknowledged as valid by the Holy See, especially as they treat the sovereignty of Italy as an appanage of the King. A *modus vivendi* for the *de facto* position has been arranged, of which these guarantee laws are the basis and by this it is possible for King and Pope to live side by side in the same city in spite of their



POPE LEO XIII.

antagonistic claims. It is true that neither of the Popes since 1870 has left the Vatican, so that the fiction of an imprisonment of the Supreme Prince of the Church is still kept up, although the Pope has since that date given audience to kings and emperors.

The present Pope, Leo XIII<sup>1</sup> (Joachim Pecci) was born February 2, 1810, at Caspino, and was elected as the successor to Pius IX in the Conclave of February 20, 1878, and crowned on March 13, in the same year.

¶<sup>1</sup> Died July 20, 1903. Succeeded by Pius X. (Giuseppe Sarto). Elected in the Conclave of August 4; crowned August 9, 1903. (Trans.)

The Papal arms consist of two keys laid crosswise surmounted by a triple crown, with a sword and episcopal staff below, and in the middle the arms of the Pope for the time being. His title is "Holiness." He can confer dignities and orders, of which the Order of Christ is the highest. The Pope has a Court with Cardinals of the Palace, prefects, privy councillors, assistants, secular court officials and bodyguards, some of which posts are hereditary in certain princely families of Rome, such as the Colonna and Orsini.

According to the Canons of the (Ecumenical Council of 1870, the Pope is to be considered infallible, when he speaks *ex cathedrâ*. Seventy Cardinals are associated with him as advisers, forming a sacred college, but the number is seldom complete, and on the demise of the Pope they choose one of their number as his successor. They are divided into six Cardinal Bishops, whose bishoprics in the neighbourhood of Rome are immediately under the Holy See, fifty Cardinal Priests, and fourteen Cardinal Deacons. Some of these Cardinals preside over the sacred congregations, of which there are eighteen, the most important being those for the Inquisition, the rank of Sacred Orders, the Propagation of the Faith (*de propaganda fide*), the Index, Ritual and Studies. Intercourse between the Holy See and the world is carried on through the Secretariates, which are also presided over by a Cardinal. These are called the Apostolic Penitentiary, Apostolic Chancery, Apostolic Datary, Apostolic Chamber, Apostolic Brevia. Negotiations with foreign powers are carried on through the Cardinal Secretary of State, who holds one of the most important posts. Finally, the Vatican library and observatories in the Papal Gardens are under the management of the Holy See.

The Catholic Church is essentially the outcome of the Italian institutions of earlier centuries, as for a long time past the number of native Cardinals in the Sacred College has largely predominated, and no foreigner has sat in the Papal Chair since 1523 (Adrian VI). Rome, with her hundreds of churches, chapels, monasteries and charities, was the Holy City, and the country, especially the States of the Church and Southern Italy, was crowded with monasteries and convents. This has been different since 1860 and 1870, as numbers of religious houses have been closed by the Government, and all new foundations and orders of the kind, unless occupied in instruction or care of the sick, have been forbidden. The then existing monasteries with their goods were confiscated, life pensions being reserved indeed to the inmates, but at the same time the reception of novices was prohibited by law. When compulsory military service was introduced it was inconsistent with it to allow young men to be received into monasteries as monks and thus to free themselves, as they would have done under the old

laws, from all duties and burdens of citizenship and to withdraw their members from the jurisdiction of the State.

These regulations, however have been applied in the half and half manner characteristic of Italy. Monasteries continue to exist in the country, and novices, both monks and nuns, are received secretly, often in foreign countries. The clergy already ordained are usually excused from military service or are exempted upon some excuse or other. The vast ecclesiastical possessions seized by the State were sold or squandered in the course of a few years. Instead of realizing gradually, they were thrown on the market simultaneously, went at ridiculously low prices and were partly bought up for very little by the wealthy ecclesiastical institutions. In Sicily the intention was to create a free yeomanry by breaking up the confiscated lands, the price of which was to be paid off in eighteen years. Instead of being bought up by the poor, however, they have come into the hands of well-to-do people and companies, who, after paying the rent for a few years, had so exhausted the soil that it had no further value and was simply given back to the Treasury. Thus this enormous source of income, which might have proved a blessing to thousands and created a class of small proprietors, has failed to bestow the expected benefit on the country. The sum realized by the State has only covered a small part of the heavy debt with which the unified State began life. A similar fate befel the libraries of the religious houses, the rich treasures of which were dispersed, the most part finding its way abroad. The valuable contents have thus, it is true, become accessible to the educated world for the first time. Altogether 42,529 religious corporations were abolished, whose income amounted to £1,280,000. The buildings were declared inalienable, the saleable land brought in £24,480,000. In 1892 there were still 2,148 monks and 8,918 nuns with an income of £268,000, but since that time the number has diminished.

In spite of this confiscation the Church is still in possession of extensive capital and large revenues which are constantly augmenting by means of pious donations from home and abroad. Of these charitable contributions the most important is the "Peter's Pence," which has been collected since 1870 for the "despoiled" Pope and brings some millions of lire annually. Then newly appointed bishops have a certain sum to pay, and it is the same with orders and ecclesiastical foundations.

Italy is naturally the country with the greatest number of bishoprics, many of which go back to the times when Christianity was first recognized by the State, and have played an important part in history. Six of these lying round Rome are the foremost, being held by Cardinals; then there are forty-nine archbishoprics and 221 bishoprics, so that

almost every Italian town has its own bishop. The policy of the Pope has attempted to bring many of these into direct dependence on the Holy See, and it has succeeded in the case of twelve archbishoprics and seventy-six bishoprics. As to the others, certain conditions are imposed on appointments, either a certain freedom of election or royal patronage. The King has to give his assent (*placet*) on the appointment of a bishop, and this is done through the Minister of Justice under whom, as being the keeper of the Great Seal, all ecclesiastical affairs are placed. In spite of much friction and many differences, they have succeeded hitherto in finding candidates and filling the sees of deceased bishops by means of compromise on both sides.

If the power of the Church has been diminished by the withdrawal of the jurisdiction that belonged to her, it yet remains very great through the large number of ecclesiastics, the importance of Rome as the centre of Catholicism and the prudent policy of the Curia. A large part of the population is bound up with the Church by family interest or material advantages, and she is slowly and imperceptibly, but constantly, increasing her sphere of influence. The Pope has, it is true, forbidden Catholics to take part in political elections, so that there is no Catholic Party in the Chamber of Deputies corresponding to the German Centre. For this reason the influence of the clergy on the elections for Communal Councils is all the more effective, and as the elementary public schools are dependent on the Communal Councils and their committees, the clergy are able to interfere in the education of the rising generation. At the same time a number of Catholic circles, corresponding to the German student-associations, have been formed during recent years at the universities and have advanced pretensions of various kinds. The employment of priests in the higher private schools and the education of the girls of the higher classes in convents has already been mentioned.

In general the educated young men are anti-clerical, which is partly due to the novelty-seeking and destructive tendency of youth. Any one who acknowledges himself to be a Republican or Socialist will, as a rule, have nothing to do with religion and ecclesiastical institutions, and this also holds of the working classes. In later years, unless the course of life chosen forces the accentuation of one or the other standpoint, indifference sets in, and these questions are avoided out of consideration for wife and children, while the external demands of religion are complied with without any real belief.

The women indeed, as the church attendance always shows, are pious almost without exception and observant of their religious duties, and this will surprise no one, considering their one-sided education and their secluded lives. The same holds of the common people, who

have not had the education necessary for forming a more liberal judgment and have been for centuries under the strictest supervision of the clergy and kept by them in ignorance. The piety of the lower classes often degenerates into superstition, and unfortunately reminds one in all its details of that worship of the heathen gods which was supposed to have passed away.

As the Christian churches in Rome are built on the ruins of Roman temples, or in the places where they once stood, so in the rest of the country the old worship of the heathen gods has been replaced by that of the saints. On the heights where Apollo, Jupiter or Mithras were worshipped there now stands a chapel of St. Michael or St. Gabriel. Minerva and Juno have had to give way to the Madonna or Saint Agatha, and St. Nicholas, the patron of sailors, has taken the place of Neptune. Of course this is not the case either with all ancient places of worship or with all of the present churches; it is rather a phenomenon varying in many ways with the locality and absent in some places, about which more accurate investigation has still to be made.

At any rate the worship of Almighty God is far less important in the popular belief than that of the Virgin and the different saints. The consciousness that these are in reality only intercessors is almost entirely lost, and they are prayed to as if they themselves could give fulfilment to prayer. If one saint does not hear, they turn to another, often previously bestowing regular insult on the former patron and removing his picture from the wall. Each saint has his special function, so that every vocation in life has its protector in heaven. St. Lucia helps in the case of sore eyes, St. Lazarus in that of burns, St. Rosalia at Palermo in that of accidents, and all have the power of performing miracles, with the representations of which all the churches and chapels are adorned. Even the Madonna, who is worshipped with several additional epithets such as *Annunziata*, *del Rosario*, etc., is treated by the people as several different personages to whom different beneficent operations are ascribed. Thus young women pray to the *Annunziata*, and wives abandoned or betrayed by their husbands make a pilgrimage to the Madonna *del Rosario* in Valle di Pompei, who is often able to work a miraculous change in the unfaithful husband. Of course each saint has his own attributes, generally instruments of torture, and a proper colour for the garment or mantle, by which the more important can be recognized at a glance. These colours are so strictly appropriated that in buying materials it is the custom to specify them as: "Holy Father brown," "St. Lucia green," etc. The Virgin, as a rule, wears a sky-blue mantle, which recurs again and again in all the pictures. The worship of the Virgin is, however, more extensive than any other in Italy, and the Festival of Our Lady, under

whatever name, is everywhere the highest, being a real pleasure to the people. Take, for example, the Feast of Madonna di Piedigrotta in Naples. Then each town has its own protecting saint, its patron or patroness, whose day is always observed as a holiday. In Southern Italy St. Michael (*S. Michele*) is one of the greatest saints; in Sicily it is St. Joseph (*S. Giuseppe*), and with the feast of St. Joseph is connected the remembrance of Joseph Garibaldi, the national hero of modern Italy, so that the day is kept even in anti-clerical circles. Children are specially petted on St. Joseph's day, as he, the foster father of Christ, is looked upon as the patron of children, and numerous booths with toys are erected in the streets of Naples on this day. Then, too, the little children with a picture of the saint in their hands beg the grown-up people for a halfpenny to buy a treat in honour of their patron. St. Joseph's Day to a great extent takes the place of our Christmas, which is not much observed in Italy.

All Church festivals are commenced and celebrated with fireworks and the discharge of firearms. The Resurrection of Jesus Christ, which is celebrated at noon on the Saturday and is announced by the bells which have been silent during Holy Week, is accompanied by fearful detonations and numerous discharges of cannon. On the evening of the Piedigrotta festival a magnificent firework display takes place at the Posillippo, and a similar display is always given on the name day of the patron saint in the smaller towns. A general collection is made for this, and it can be seen from the greater or less splendour of the display whether the people are suffering under economic depression, as has been the case in recent years.

The Carnival belongs to these church festivals, but has long passed its flourishing period. The masquerade in the streets of Rome, described so vividly by Goethe, has become quite insignificant, the horse racing in the Corso has been forbidden in consequence of several accidents, the pressure of the time is too heavy for men to have money to spend on mummeries, so that the Roman carnival is chiefly kept alive by foreigners. In Naples, where a similar proceeding used to take place on the Toledo, nothing of the kind is now to be seen. The only thing is that carriages are not allowed to drive that day in the street, the whole breadth of which is given up to the multitude promenading up and down.

Representations of the birth and burial of Jesus Christ are to be seen in the churches decorated for Christmas and Easter (*Il santo bambino* and *il santo sepolchro*), and to them the public direct their attention, gratifying their love for spectacles by wandering from church to church, while the priests are proud of having specially successful groups or splendid decorations. There is a kind of popular festival at

Naples at the liquefaction of the blood of the patron saint of the city, Saint Gennaro (*Januarius*), who met a martyr's death in the amphitheatre at Pozzuoli. His skull and a phial of his blood are the most valuable relics in the cathedral.

This phial is brought out with great ostentation in the crowded church and if the saint is favourably disposed towards his city the miracle takes place, the red mass dissolving and becoming liquid. Then the fervour and passion of the praying people rises to a greater and greater height till it passes over into ecstasy or convulsions, and after the completion of the miracle a kind of intoxication of joy takes place. It is well known that on the entry of Garibaldi into Naples, in 1861, the blood refused to flow and the mob were beginning to be troublesome, till a word from the general brought about the performance of the miracle. According to the popular belief St. Januarius has protected Naples several times against the lava streams of Vesuvius, notably in 1631, and as a mark of gratitude his statue has in consequence been placed at the boundary of the precincts of Naples, with a warning hand raised towards the mountain.

In Catania the same part is played by St. Agatha, whose veil held up before the glowing lava in 1669 compelled it to go round the town and discharge itself into the sea at the side of the town instead of passing through it. On certain days the protecting saints are carried in solemn procession through the streets. For some time these processions were forbidden, but during recent years they have been resumed under the connivance of the administration, and even the prefects have in some places taken part in them. In Naples St. Januarius pays a visit to St. Clara (Sta. Chiara), accompanied by the gold or silver statues of forty other saints, the Cardinal Archbishop taking part in the procession. He remains in her church till the evening, and is then led back to the cathedral in the same solemn manner. In Sicily the Madonna della lettera in Messina, St. Agatha in Catania and St. Rosalia in Palermo are carried round in a similar manner. The statue of the saint is enthroned on an erection twenty feet high and carried on the shoulders of the strongest porters to be found. It is said that living children are attached to the statue in a pendent posture to represent a choir of angels.

Public processions have, however, ceased in Rome since the Annexation, but in the churches, especially St. Peter's, there is displayed in the presence of from thirty to fifty thousand persons the full brilliancy and the ancient splendour of the Roman processions, the power and omnipotence of the papacy. Enthusiastic shouts greet the Prince of the Church as he is drawn from the chambers of the Vatican through the sacristy into the nave of the cathedral seated on the throne (*sedia*

*gestatoria*). and surrounded by his Cardinals and bishops, his secular officials and his bodyguard of nobles, and overshadowed by fans and ostrich feathers. Then there rises from the mouths of the attentive multitude, especially the foreign pilgrims, that cry of "evviva il papa-re." which always raises tumult in the Italian state, and all the thousands fall on their knees to receive the blessing with due humility.

Thus the Church is endeavouring to enchain the minds of the people by means of splendour, processions and spectacles, and she has thus succeeded in imposing on the curiosity, the love of show, and the religious understanding of the masses. To the Northerner this kind of thing does not appear really solemn. Neither the churches overladen with ornament, nor the saint worship, which reminds us of heathenism, nor the Church music, which frequently consists of dance music or opera tunes played in quick time, can give rise to true concentration of mind and devotion. The ceremonies seem to be scarcely taken seriously, for it not seldom happens that a stranger looking round the church is directed to the sights worth seeing by people apparently sunk in devotion, that the priest hearing confession examines the passers-by with curiosity, or that the sacristan will, for a tip, place a board on the altar for the visitor to mount on to obtain a glorious but somewhat smoky view.

In spite of its great influence the clergy does not enjoy great respect. This holds especially of the lower ranks of the clergy, who are badly paid, frequently only getting a franc for the daily Mass from some endowment, and eking out a miserable subsistence with writing letters and the like. The "prete" is still a favourite object of jokes and allusions with double meanings, just as he was in the time of Boccaccio, and he turns up again and again as a ludicrous figure in the comic papers. He is looked on as a kind of parasite who does not work, but lives on the work of others, and even sometimes as a harbinger of misfortune, for it is looked upon as a sign of approaching death if a priest is the first person encountered in a new year. In addition to this, these people, owing to their poverty, often possess only shabby worn-out canonicals, and having no one to look after them at home, are often very dirty.

We have had occasion to speak more than once in this chapter about the superstition which dominates the whole of the lower classes, especially the women, but which is often united in a wonderful manner with religious life. At the time of the cholera in Naples (1824), the people believed that they could keep the disease away by sprinkling the dwelling with holy water, setting up a blessed candle, or keeping a lamp burning constantly before the image of some saint, or erecting a cross or a statue of the Virgin in the street. The doors of the lower

storey might be seen stuck over with placards, "Go by (to the cholera or to the Destroying Angel), the heart of Jesus is with us." Amulets, or images of saints, are hung round the necks of newly-born children, or they are sprinkled with holy water to keep off evil spirits. Even grown-up people will carry a palliative of this kind even if it is hidden, as the chief thing is that a man has such a thing on him which he can take hold of in any imaginary or real danger. Prayers are offered to the patron saint to communicate the successful number in the next drawing of the lottery, either by a dream or by some striking event.

There is great fear of the Evil Eye (*mal occhio*), against which the same preventives are used and the same amulets worn as by the ancient Romans as shown in the excavations at Pompeii. Many people lie under the imputation of possessing this unlucky look, or of exciting an evil influence by their presence; in Naples they are called *Jettatori*. People get out of their way, and where this is impracticable protect themselves by wearing coral amulets on the watch-chain or round the neck. Occasionally hate and repulsion rise to such a point as to lead to murder or violence. Belief in witches is also widely spread; many a poor old goody has to suffer for it, is perhaps feared for the secret power ascribed to her, or is even sought out in secret to tell fortunes by the cards or to prepare a love philtre. In all these matters the Devil gives to the wicked the same kind of help as the saints give to good people. So that performing similar functions and using the same means he is almost a saint, at any rate, one occasionally hears the expression, "Santo diavolo," in which there is perhaps the thought of propitiating him by the inappropriate adjective, and thus keeping him off.

Pilgrimages are another expression of ecclesiasticism. The most numerous are those to Rome to visit the tombs of St. Peter and St. Paul at the sacred steps beside the Lateran. The Shrine of Loreto at Ancona, where the Holy House of Mary is to be found, is renowned throughout the world, and is visited every year by thousands for needs of body and soul. It had once a rich treasure, obtained by donations, but this was carried off by the French revolutionary army. Even now, however, £2,000 annually are contributed by the pilgrims. Pilgrimages are made at Whitsuntide to the Church of the Madonna, situated high up on the Monte Vergine, near Avellino. Vehicles gaily decked out with ribbons and the horses adorned with plumes and bells, come from all sides into the quiet valley of the Upper Serino. There is a splendid road to the shrine, which, quite deserted at other times, is thronged at Whitsuntide by thousands of pilgrims, and long trains of vehicles, and on the open space before the church a brisk fair is held. This height dominates the wide plain of Campania, and the

view of Vesuvius, the Gulf of Naples, and the fertile champagne, bright with luxuriant greenery, as well as of the dark lonely mountain heights on the other side of the valley of the Serino, is one of the loveliest to be seen even in this region, rich as it is in charming landscapes. After prayer and absolution and the purchase of blessed images and other memorials, every one drives down as quickly as they can to satisfy their bodily wants by eating and drinking at Avellino and the different towns along the Naples road. On Whit-Monday the vehicles all return to Naples and drive through the city to the Posillippo, where the expenses are shared in the taverns. This often results in quarrelling and bloodshed, as the feelings are heated by wine and each man thinks he is being cheated by the others.

In Sicily the Shrine of Santa Rosaria on Monte Pellegrino holds a similar position, but it is nearer to Palermo than Avellino is to Naples, and to this also a high road for the pilgrims rises serpent fashion with many turns. The Madonna di Trapani is much visited by the Sicilians; the church is two miles from the town, and is supported by the alms of mariners. There has been much resort in very recent times, to the Madonna del Rosario in the Valle di Pompei, so that instead of the uninteresting village of thirteen years ago there is a large suburb with electric lighting, a splendid but over-ornamented church, and many inns for the reception of the pilgrims. In Umbria and Tuscany pilgrimages are made to Assisi, where St. Francis the founder of the Franciscan Order lies buried and performs miracles. In earlier times the Benedictine monastery on the mountain above the little town of Monte Cassino was in high repute, but it has been confiscated by the State, and at present is little visited by the people.

Many of these shrines, as may be seen from the last two examples, are closely connected with some religious order, which of course looks after its popularity and renown.

In spite of the reform of 1861, spiritual orders still exist in great number throughout the country. The most important are the Franciscans, the Dominicans, the Benedictines, the Jesuits and their several offshoots. In all there are orders both for men and women, and during the last ten years their number and public display has been constantly on the increase.

One sees most of the brotherhoods in the case of funerals, as they accompany the corpse to the churchyard carrying wax candles two-and-two before the hearse. According to the number of these a guess can be made as to the position in life of the deceased or of his family. Even laymen can be admitted into what are called Tertiary Orders if they take certain lower vows. One of the principal duties of a brotherhood of this kind (*Confraternita*) is to accompany members of

their community to the tomb. They either wrap themselves up in a long red or white habit reaching down to the feet, and a hood over the head with two holes for the eyes, or without this costume they simply wear a rope round the waist as a sign of humility. The habit is only for the purpose of ensuring equality, so that a man of position, for example, can pay the last service to a poor and lowly one without having to be ashamed of it. A train of this kind looks very strange, it is true, and it is no wonder that Don Quixote in Spain, where the custom is also in use, thought he beheld a troop of devils. In Naples, in the case of very distinguished people, they hire a number of invalided soldiers or paupers from the *Albergo dei Poveri*, whose part in the proceedings is only to make the train longer and thus to make a greater show.

The pomp and splendour of funerals is very great and they are often carried out with much extravagance. Among all the frippery of gold lace, feathers, ribbons and flowers, the solemnity of death is quite lost sight of, and perhaps there is the deliberate intention to conceal it under these accessories, as being unpleasant and not suitable to the gay spirit of the people. The funeral orations are as showy as the other accompaniments, the speakers delivering themselves in the finest, most pompous terms to their heart's desire, so that one is reminded of the funeral speeches of the ancient Romans.

The different brotherhoods possess a special burial-place in the churchyard as their common property ; it consists of numerous niches lying one above another in rows. When the corpse has lain a year in the earth it is dug up and the skeleton is deposited in one of these niches, which is then closed by a slab of marble, bearing the name of the deceased. This kind of burial is extraordinarily like that of the ancients in the Catacombs of Rome, Naples, and Syracuse, with this difference, that these cells all lie above the earth like the ancient burial chambers hewn in the rock above the theatre of Syracuse, along the carriage road to Neapolis. Here, too, a morsel of antiquity has made its way into modern times.

The churchyards in Italy receive a stamp of their own from their adornment, by statues, in addition to what is given by these *Columbaria*. The Campo Santo of Milan is famous, but it does not excel those of Pisa, Genoa, and Naples. The climate is so mild that marble lasts well in the open air, and the churchyards are consequently diversified with groups of statuary, the manufacture of which gives work and support to the art of sculpture. Many of these statues show that the Italians use the chisel with taste and intelligence, but others rather strike us as comical, as when the mourning widow, large as life and in full street costume of the most modern make, is bending over

her husband's grave, and every fold of her veil, and the momentary fashion, even to bows and buttons, is accurately reproduced in stone. This is rather artizan work than art, and it becomes ridiculous when it is united with a pathetic attitude.

Returning from this digression about manners and customs to the ecclesiastical situation, we have still to speak of the non-Catholic religious societies. As there is no Establishment, these manage their own affairs quite independently, just like the Catholic Church, and have nothing to do with the Government. Protestants and Waldenses were rigorously persecuted for three hundred years and more by the Inquisition and its secular arm and by the despotic governments of the small states. They were not allowed to build a chapel or a church anywhere; in Rome and Naples celebration of divine service was only possible in the ex-territorial regions of the embassies or in the houses of the consuls. The Protestant was not looked upon by the people as a human being; "è una bestia," he is a monster, was the expression then, and in the remote parts of the Apennines of Calabria and in Sicily the like may even be heard to-day. Since 1861 and 1871 respectively, non-Catholics have had freedom of worship, and the consequence has been that chapels and meeting-houses belonging to the different confessions and sects have been erected in several towns, and even in Rome.

According to the enumeration of 1881 there are some 62,000 Protestants in the country, of whom 22,000 belong to the Italian Protestant sect of the Waldenses. This religious community, founded in 1177 by Peter Waldus, suffered violent persecution from the Popes from its very foundation. In 1477 there was a crusade preached against it by Sixtus IV, and in 1680 a massacre of several thousands of people took place. After the Reformation they entered into communion with the Calvinists, the nearest to them in situation, their head-quarters being Geneva, and in spite of all persecutions, they have maintained themselves in the valleys of Piedmont, like the Huguenots of Lorraine. Their chief positions are Val Martino, Val Angrona, and Val Lucerna, where there are fifteen of their ancient congregations. Since their recognition in 1848 by Victor Emmanuel, they have founded over forty of what are called Evangelization Congregations in several cities of the land, whose duty it is to keep together the brethren living in the *Diaspora*, and to carry on an evangelical mission among the Catholics. As the Waldenses are fellow-countrymen of the Italians and preach in their language, they have the best prospect of making proselytes among them. In Florence there is a theological school for the education of their clergy, who afterwards complete their studies in Geneva, Paris, or even Germany, and are then appointed to their office by a mixed

synod of clericals and laymen, sitting as chief council of the Church. The Waldenses are considered in Italy as industrious, loyal to duty, conscientious and truth-loving, and they have made blooming tracts of ground of their Alpine valleys. In many respects they are the direct opposites in character to the people of Southern Italy, and have consequently met with little success among them in their mission work.

Foreign nations, the French, the German, the Swiss, the English, the Americans, have introduced the Lutheran, Reformed, Anglican, Methodist Churches and other sects. In Rome there are already American Methodist and Anglican places of worship, and collections have been made very recently for the erection of a German Protestant church. In Naples the Germans and Swiss have had for some years independent congregations, with a chapel which is made use of by both, besides schools which are used even by Italians, although the education is carried on in a Protestant spirit. It is often the Swiss, distributed through the land as hotel keepers, directors of factories, superintendents or trustworthy artizans, who bring Protestantism into what have hitherto been purely Catholic districts, so that now small congregations are maintained at Scafati, Salerno, Catania, Messina, Palermo, Bari, and other towns.

There used formerly to be in the cities of Italy, as in those of Germany in the Middle Ages, a special Jewish quarter called the Ghetto, the best known being that at Rome. The number of Jews is relatively small, as they found in the Italians worthy competitors in their chief occupation, that of trade. On the whole there are some 50,000 Jews in the country, of whom from 6,000 to 7,000 are resident in Rome, 4,000 in Leghorn, and in Turin, Venice and Florence, something over 2,000 each. They completely disappear in the equally dark population of Southern Italy, in which many Semitic elements are mingled. Although Jews are said to be numerous in 120 communes, it is only in forty-eight that they have any church organization. Florence and Leghorn have splendid synagogues. The latter town, from the time when it first became a harbour, has been accessible to all merchants without religious distinction, and for a long time it has had an independent Jewish congregation. There are also a number of Israelitish printing offices, whose productions supply a great part of the Orient. In general, religious worship and observances are at a somewhat low ebb among them. As yet there is no trace of Antisemitism in Italy, and there can hardly be any reason for such a movement there. Jews as well as Protestants have to provide all expenses for church purposes, either by endowments or freewill offerings.

## CHAPTER XV

### Art, Language and Science

ALTHOUGH the history of Italy abounds in tumults and painful political events, it is incontrovertible that during several centuries its people produced much that is great and even imperishable in Art and Science, and that its intellectual leaders gave a powerful impulse to creation in both of these by revivifying classical antiquity. The treasures of art on the soil of Italy are numberless, and the very system of small states, which kept the people from political unity, fostered local peculiarities in a wonderful manner and caused varied artistic power to display itself, so that almost every division of the country took the leading part in one species of art or another. Italy is still the classic land of Art ; its wealth in this respect gives enjoyment year after year to thousands of foreigners, and under its bright sky and among its joyous natural population new creations in painting and sculpture are being produced without intermission. It is true that these are for the most part from the hands of foreign masters educated under the influence of Italian masterpieces.

To begin with Architecture, the world has to thank the Romans for the introduction of the arch. The light tufa, and still more the excellent mortar made with the help of pozzolana, rendered possible those vaults and domes which we admire so much in the Pantheon, the Baths of Caracalla and the Basilica of Maxentius, and which have been used as patterns in all later cupolas.

The first centuries of the Christian era gave rise to the long basilicas with their regular arrangement of columns, a form preserved in many churches of Rome, as well as to the circular or octagonal churches of which the churches of Ravenna and the Minster of Aix la Chapelle are examples. Our astonishment is excited by the subterranean tombs of the Catacombs, which were opened and explored in the second half of the nineteenth century, and have supplied a mass of material relating to the life of the early Christians. The construction of these numerous passages crossing one over another or running parallel, without the help of the compass, required great skill and experience, and the like holds of the tunnels and drainage system of the Roman period.

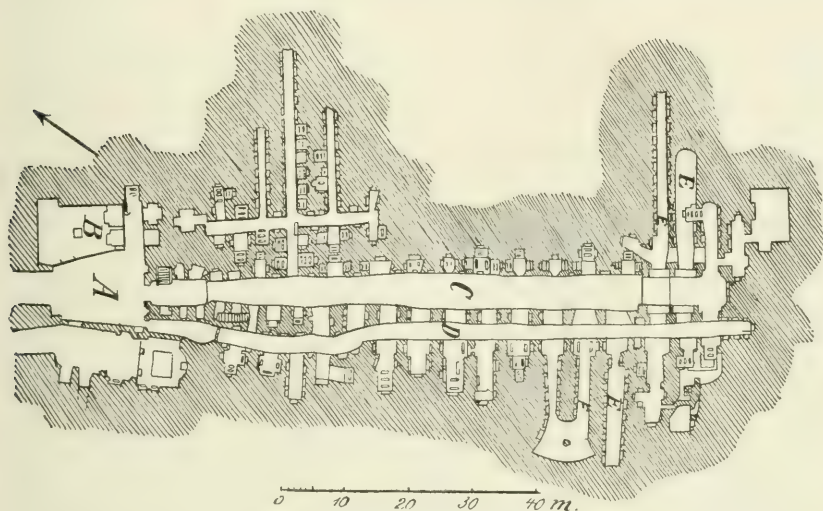
The Roman or Norman style, an outcome of that of the early Christians, was not so extensively used in Italy as north of the Alps. At the same time the cathedrals of Pisa and Lucca are fine monuments





THE CATHEDRAL OF ORVIETO.

of this kind of architecture. On the other hand the Italians mastered the Gothic style in the thirteenth and fourteenth centuries, altering it in a peculiar manner, as is proved by the cathedrals of Milan, Florence and Orvieto, by carrying over the interior ornament to the exterior or varying the monotony of the walls with numerous decorations. Southern Italy and Sicily developed a special style at the time of the Normans, making use of and bringing to perfection the Arabic arch and Arabic ornamentation (cf. p. 315). Venice too, under Eastern influence, had its own style of architecture, partly of Byzantine, partly of Arabic nature. The cupola has always been a favourite form in Italy, it received its highest development in the time of the Renaissance, the cupola entering into organic connexion with the long form



GROUND PLAN OF A STORY OF THE CATACOMBS OF S. GENNARO AT NAPLES.

of the nave. The country owes its finest works of art to the fifteenth and sixteenth centuries, when they went back to the antique forms. To this Renaissance period belong St. Peter's at Rome, the Certosa at Pavia, and numbers of Florentine palaces, but the details of these are given in the chapter on Topography. At that period Bramante (1444-1514), Raphael (1483-1520), and Michael Angelo (1475-1564) carried native architecture to its highest pitch. The second half of the sixteenth century created the Barocco style with its excessive decoration, in which however there are still many fine buildings erected before its complete degeneration.

Modern times produced no extensive buildings till the Unification, and these are to be looked for not so much in the shape of churches

as of palaces for definite useful ends, of harbours, of city extensions, and of aqueducts. Above all, *gallerie*, which are halls for markets or promenades, have been built in the larger towns, of which that at Milan is the first and finest. It was erected by G. Mengoni in 1865-7, and was followed by those of Genoa, Turin and Naples. Banks, courts of justice and government buildings, with a number of tasteful palaces have been erected in Genoa, Turin and Rome, the architects giving preference to the high Renaissance style. But in general one is struck by the poverty of ideas at the present time, despite so many splendid examples to follow, and by the want of any modern national style. The new quarters of Rome, Naples and Florence give an impression of monotony and barrenness, with their broad streets cutting one another at right angles and their gigantic piles of buildings formed on the same plan. They are just barracks for a hundred or more people, and the colonies of villas surrounded by gardens, which make a pleasant whole to be seen in all the cities of Germany, are entirely absent. This barrenness of all new buildings is due first to the fact that there are no regular schools of art where systematic instruction is given in architecture, and secondly, the circumstance that these enormous houses are generally raised by building societies, to whom the gain from selling or letting is the most important matter, all the more that they themselves are often in a very shaky condition. Then these societies do not generally build in detail themselves, but hand the work to contractors for an appointed sum, and these of course have no interest except to work as cheaply as possible and to satisfy the necessary requirements of the police authorities.

One of the most magnificent undertakings of recent times is the "sanitation" of Naples, where it appeared necessary to clear away the dirty and insanitary lowest part of the town. The State contributed four millions sterling, which were applied to the construction of an aqueduct, a mighty subterranean system of canals (*Fognatura*), as far as the Gulf of Cuma, and to introducing air and light to the unhealthy part of the town by means of a broad straight street (*Rettifilo*).

Rome, when it became the seat of government, required extension, the portions of the town already existing being quite insufficient for the numbers of people who resorted to it. On what is called the Campus Martius and on the Tiber above the hill of the Vatican, a new quarter has grown up, and such speculation took place in all kinds of building that a collapse became inevitable. This set in at the beginning of the nineties and ruined many families of position, causing the failure of a number of banks, and for a long time gave rise to much disturbance in the finances of Italy, as the banks of issue were drawn into the whirlpool. On the other hand, the embankment of the Tiber within

the city has been brought to completion, thus at length securing the lower parts of the town from being flooded. Florence also, when it



READING DESK IN THE CATHEDRAL AT RAVELLO, BY NICOLO DA FOGGIA (1272.

became the capital of the kingdom, had a period of vigorous building operations. The community made great sacrifices to appear worthy

of the honour which had come back to her, but this was dearly paid for when the transference of the government to Rome caused landed property and houses to fall in value. Milan and Turin became centres of industry during the last twenty years, and have seen numerous factories and workmen's quarters grow up at the boundaries of their former precincts. Milan especially is being extended on all sides, and this is easy, owing to its position in a plain. The old fortifications have naturally been razed or turned into promenades.

Genoa has gradually received large harbour extensions which are worthy to vie with those in the south of France. The same holds of Leghorn, and of late years similar undertakings have been planned and partly carried out in Naples. It is in the construction of conduits of all kinds, subterranean works and gigantic aqueducts that the Italians specially distinguish themselves. In general, the present art of building, as so many other things, suffers under that dishonesty and tendency to cheat which obtrudes itself at every turn.

Painting and Sculpture have followed nearly the same course of development as architecture, the highest point having been reached in the fifteenth and sixteenth centuries. The ancients do not appear to have carried the art of painting very far, as the laws of perspective were not familiar to them, a defect under which the landscape paintings of Pompeii suffer. But in the early Christian times even the little technical skill attained by the Roman artists was quite lost. It was not till the year 1000 that attempts began again to be made to produce large coloured representations. These were mosaics, and the most important of them, in Venice, in the Capella Palatina at Palermo and in the cathedral of Monreale, display firmness in the technical skill and variety in the ideas. Painting proper, with brush and colours, first arose in the fourteenth century and quickly gave rise to special schools in the different districts. In the fifteenth century arose the schools of Florence, Umbria, Padua, and Venice, the most prominent masters being Fra Angelico da Fiesole, Sandro Botticelli, Pietro Perugino, Andrea Mantegna and Giovanni Bellini. The highest point was reached in the works of Leonardo da Vinci, Raffael Sanzio and Michael Angelo Buonarrotti at the beginning of the sixteenth century, with whom are deservedly classed Correggio, Titian and Sodoma. In the seventeenth century the different painters of the Caracci family worked in Bologna with their scholars, the best known of whom is Guido Reni. In Southern Italy the influence of Spain made itself felt and led to the representation of ugliness in colours which were monotonous and the reverse of Italian.

Modern times have produced no painter of importance. Italian painting of the present day is distinguished by technical skill, bright

colouring and partly by sharply marked light and shade. The favourite subjects are genre pictures, street and shore scenes, and illustrations of the life of the people, in which the liveliness of the subject comes to the help of the painter. Just now there seems to be a resuscitation of landscape painting, for which the Italians have always had but small appreciation. At present they are surpassed in painting by the French, the Scandinavian, and even the Russian masters. Several foreign states, such as France and Spain, maintain institutes in Rome for the education of gifted artists who complete their studies before the numerous masterpieces of the country, after showing their capacity by some prize work at home.

A great deal of painting, however, goes on in Italy, as a kind of artizan work has been developed in consequence of the demand from abroad. There are besides certain art schools (*Accademie delle belle arti*) at Venice, Milan, Naples, Florence and Rome, which are well attended and occasionally give out good work. The art of mosaic too is again being practised, especially in ornaments, in Venice, Florence and Rome, and the mosaics within and on the outer walls of churches have undergone repair in many places since 1851, which has given new impulse to this branch of art.

In the times of the later Roman Emperors and during the Migration of the Nations the art of Statuary declined and perished. We are surprised that with so many good exemplars the early Christian work should be so stiff and clumsy, and this imperfection lasts till the middle of the thirteenth century. At the beginning of the fourteenth century a school of sculpture arose in Tuscany, especially at Pisa, which produced work of sterling value; the carving of pulpits and cathedral doors and sculpturing monuments (e.g. the Scaliger monument at Verona), thus preparing for the coming revival. By the study of nature Jacopo della Quercia, Donatello, Lorenzo Ghiberti and Luca della Robbia improved this branch of art till Michael Angelo carried it to its highest point in the free treatment of the human form. His Pietà, his Moses and the statues on the Tombs of the Medici at Florence are well known. Benvenuto Cellini is the one of his successors most deserving of mention, while in the seventeenth century, at the time of the Barocco style, plastic art passed all permissible measure in exaggerating the limbs and the drapery, and in the eighteenth it went entirely to ruin. At the boundary of the eighteenth and nineteenth centuries stands Canova, whose numerous statues, like those of Thorwaldsen, are formed on the antique, but suffer at the same time from a certain smoothness and neatness in outline and conception.

Modern Italian sculpture has followed these lines for long past, partly falling off into insipid realism and partly preferring what is

sensational and forced. Most of the modern statues suffer under the



MARBLE GROUP OF THE BROTHERS KANARIS, BY BENEDETTO CIVILETTI, IN THE FLORA AT PALERMO.

last defect, suiting indeed the taste of the nation, who love pathos and look upon it as dignity and power, but allowing the inner repose

necessary in a work of art to be lost. The statues before the king's palace in Naples, the monument to Cavour in Turin, and the Kanaris group at Palermo may be cited as examples. The numerous monuments in the churchyards are marked by fidelity as portraits and by realism ; this has already been spoken of. As in the case of the numerous statues raised in Germany to the Emperor William and Frederick III, the monuments of the heroes of the liberation of Italy, Vittorio Emanuele, Garibaldi, Cavour, Minghetti, Ricasoli have supplied remunerative subjects and plentiful work to the sculptors, and yet the greater number have not exceeded a very moderate degree of merit, while many, such as the Cavour monument, are absolutely tasteless. A monument is to be raised at Rome similar to the German Nationaldenkmal. It is to cost several millions of lire, contributed by the whole country, and is to consist of a grand flight of steps surmounted by an equestrian statue of the first King of Italy surrounded by the heroes of the wars of liberation. It cannot yet be judged how this gigantic arrangement of steps will ultimately turn out. A love of extensive flights of steps is widely spread in the whole of Italy, and recurs in all cities built on somewhat hilly ground, such as Florence, Rome and Naples.

Italians have a special gift for music, especially melody. Everyone plays some instrument or other, if it is only the guitar or mandoline, and enjoys every kind of concert. In all places which think anything of themselves, even if they consist of the most wretched and dirty hovels, there is a *banda musicale*, which gets its scores and instruments supplied by the commune, and has in return to give a concert every Sunday and holiday. Musical contests frequently take place between the different bands, and the victorious town is proud of its musical performances. The playing is for the most part pure in melody and good as to touch, but the conductor does not follow the rhythm of the score with any accuracy, everything being played with fire and in rapid time. Impetuous music meets with most applause, and the different pieces are pitilessly adapted to this taste, so far as it is at all possible. We gather from a remarkable comparison as to the different provinces from which the performers come, that from one to two per cent. of the inhabitants of the whole country belong to these instrumental bands, but that in the strip of land between Arezzo and Grosseto, near Macerata, the number is more than three per cent., while the inhabitants of the Basilicata and North-Eastern Sicily are the least musical of all.

These bands do not, however, play to accompany dancing, which is never public in the taverns as in Germany, but is a pleasure enjoyed in private, the dancers themselves playing the castanets or mandoline, or one of the spectators supplying music or rhythm. One of these dances,

the tarantella from the Tarentine district, is spread through all Southern Italy, and is a great favourite. Popular dances may also be seen at harvest festivals and holy days, in the open places or in hired rooms, when a company is elevated with wine and gives itself up to merriment.

On these occasions the people sing as well, either solo with a refrain or all together to the guitar and mandoline, as they do to the concertina in Germany, and then they often fall into a kind of singing contest, singing against one another in alternate verses. If the singer wishes to sing with great feeling he resorts to the tremolo, which becomes at last quite unendurable. Then each one tries to sing as loud and as high as possible, so that forced falsetto spoils most of the songs. The bands of professional singers in South Italy who go from tavern to tavern accompany their singing with gesticulations, play of the countenance and contortion of the body, or with dancing, and the more frantic and ardent their gestures the greater pleasure they cause. In country places the people sing over their work, mostly with but few notes, getting louder and louder and ending on a long drawn out syllable. The words are indifferent to them, frequently they are only names of saints, e.g. "Benedetta sia Maria," the whole strength of the lungs being kept for the final *a*, as it is quite an art to hold this out longer than any one else. Thus the call sounds from field to field, from hillside to hillside, betokening that the workers are joyous and that the work is proceeding briskly.

Upper Italy, especially Savoy, is the home of the barrel organ industry, whence come those "Italians" who traverse the roads of Germany and of late have made their way even to the Baltic. The organ is from £8 to £16 in value, and is often their only possession. With this they wander about ceaselessly to get their living, often with more success than might be expected. When with frugality and sobriety they have put by a few pounds, they make their way home and either buy a piece of land or become organ builders themselves.

In Southern Italy the barrel organ has been replaced for some years past by the piano organ, a fearful instrument, which hammers out its tinny tunes with unpleasant rapidity, but has been received with so much approbation by the many that in Naples the police have had to limit the number of them. Two people generally hire one of these instruments of torture and go about the streets with it, making rapid progress on flat ground, one pulling and the other pushing, and even getting up and down the hills, till they take up their position before an inn or at a street corner, where there seems a good chance of a circle of hearers and a good collection.

From antiquity to the present time the Italians have produced

great works in the domain of Music. Italian words are used even now to indicate notes, chords and rhythm, and the great German masters formed themselves on Italian patterns. Church music, now in such a miserable condition, had a master of the first rank in Palestrina (1526–1594), whose studies in counterpoint and fugue served as models to Bach and Handel. The graceful Italian Opera, so rich in melody, dominated the courts of all European princes in the sixteenth and seventeenth centuries, and was brought to perfection by Mozart. The names of Cimarosa, Mercadante, Bellini, Donizetti, Cherubini and Rossini are well known in the whole world for their pleasing compositions. In later times Verdi has been the honoured composer of the country, and in the times of the Austrian oppression after 1848, he even played a political part, as his name might be cheered without restraint, while his initials indicated Victor Emanuel and the unified kingdom (Vittorio Emanuele Re D'Italia). The recent musical works of Mascagni and Leoncavallo have been received in Europe with unmeasured applause, and show that the Italians have still the power of producing graceful melodies. The music of Wagner, poor in melody and difficult to understand, has not become naturalized in Italy. Verdi, it is true, adopted this style in his latest works, but the uninterrupted sequence of notes which makes a constant claim upon the attention by concealing the leading theme is foreign to the Italian ear, and corresponds neither to his nature nor to the aim of the theatre-goer, who likes to listen to something fine, but does not care for any strain to be put on his powers of mind.

There are a great number of popular composers whose airs can generally be caught up quickly by the common people, who buy them in large quantities. The music and words of these songs are offered for sale everywhere and find purchasers. It is not too much to say that the man in the street learns to know his notes before his letters.

Italy produces a great number of singers and performers. In earlier times no court-opera was without its Italian tenor. The Pope's choir formerly enjoyed the highest renown; they consisted partly of eunuchs, and sang in divine service in the Sixtine Chapel, the Lateran, and St. Peter's. At the present time most people are disappointed with this singing, especially when one has before one's eyes their bloated forms, the high children's voices raising a feeling of repulsion. Of performers we will only name Paganini, who raised a perfect storm of delight and enthusiasm in all countries, and indeed has never been surpassed as a violinist. He received support by his excellent instrument, as the most famous violin makers are also Italians (Guarneri, Amati, Stradivari), and their old well-seasoned violins are purchased now for hundreds of pounds.

The Italian people take a far greater interest in their public singers male and female, in their performers and composers than the Germans do in theirs. The *début* of one of these, or the production of a new opera, is an event of the first consequence, political wrangling is forgotten over it, and the newspapers bring out long paragraphs upon it. Every mark of honour which these people receive abroad is published, and received with a feeling of national pride. Even those Italians who live abroad desire to hear and applaud these stars, so that almost all important *artistes* have to make a voyage across the ocean to visit their countrymen in Argentina and Brazil.

The art of dancing owes some of its first names to Italy, and indeed there have been whole families in whom talent for this art was hereditary. In the eighteenth century the family of Vestris had great renown, in the nineteenth it was the Taglioni who gave unmeasured delight by their agreeable and beautiful dancing.

The art of acting enjoys general favour in Italy no less than dancing and music. There is a bit of the actor in every Italian, and whether it is the proceedings in the Chamber or an ordinary purchase, those who take part in it are always playing a bit of comedy one on another. The sermons in the churches, especially at fast times, are always oratorical displays in which every note in the gamut, of anger, hatred, lamentation, and coaxing persuasion, is struck in turn ; even tears are not absent, any more than in the law courts, where the advocate endeavours to make both judge and jury favourable to his client by weeping and lamenting. A defence of this kind reminds us of the oratory of Cicero, and seldom fails to make the desired impression, although the cause in question may have deserved a different decision.

The people of Southern Italy has its own theatre at fairs or in open places, with the acting in dialect. The Teatro San Carlino used to be the first of its kind in Naples, and was always full to the last place. Then the Punch and Judy man with his portable stage goes round and collects a circle of attentive and pleased spectators, where he gives forth his best jokes. Everything that moves the people, politics, taxes, parish scandals, church doings, are all handled and made ridiculous with more or less happy improvisation. At Christmas and Easter children often act pieces from sacred history under the direction of the clergy, or, as at Areceli in Rome, they deliver sermons, and in these performances an astonishing aptitude for acting is displayed by these boys and girls.

The great Italian theatres, such as San Carlo at Naples, La Scala at Milan and Teatro Argentino at Rome, are well known. To these the community contributes a large subsidy, in return for which a manager undertakes the performances for an appointed period. He

enrols the company, puts the new piece, which is almost always prescribed to him, on the stage, and afterwards he will often go off with his people and properties to another stage. Besides the three great theatres there are in each of these cities at least four or five smaller ones, and there are also theatres in the provincial towns, which, it is true, are only made use of temporarily by travelling companies.

The prices of seats in the Italian theatre are in general low, whence it comes that the theatre is looked upon as a place for social intercourse and for paying and receiving visits. Besides the stalls and the pit, the large playhouses have only boxes, which are rented entire and for the whole season by different families. Any one can enter the theatre who pays the low entrance fee, often only one lira, and it is then possible to pay visits to the boxes of the families of one's friends and acquaintances. This is one of the only occasions on which young people of the two sexes are able to enjoy social intercourse with one another, and a visit in the theatre counts for almost as much as one to the dwelling house. Conversation goes on without restraint and without any regard to the actor or the stage. The public is only quiet and attentive at the entry of some famous actor or at the beginning of a monologue or a favourite air, to break out again at the close into tumultuous applause and cries of encore. On this, without any feeling for the interruption of the course of the piece, the solo is repeated once or twice, the actor taking his stand at a different part of the stage. As the object of the theatre is quite as much that people should be seen as that they should see, the toilettes of the audience are usually splendid and hardly inferior to those of a ball-room. The single gentlemen often go a short time before the rest of the company and exchange news. Thus it happens that the theatres are also places for political demonstrations, which break out without being suggested by any sentence or scene and not seldom spread from the theatre to the street. For any cause, in consequence perhaps of an exciting piece of news, the public will suddenly and vehemently call for the Royal March (*Inno reale*), or Garibaldi's March (*Inno Garibaldi*), and will not be contented till these have been performed twice over, quite indifferent if the opera is spoilt, and then those present go home with the feeling that they have performed a national deed, and next day all the papers are full of praise of their patriotic enthusiasm.

Italy has produced a long series of distinguished actors, but of course they are for the most part forgotten. Posterity weaves no wreaths for stage-players. Among tragedians we may name Rossi, Tomaso Salvini, Ermete Novelli, and Zacconi, as well as the actresses Ristori and Duse. The comedians are less known abroad in spite of the

eminent gifts of the Italians for presenting the ludicrous aspect of things and for unsparing mockery. The more recent art strives after extreme realism, as in the dying scenes acted by Zacconi, or after high tragedy, by means of pathos and passion, so that just the same currents are in conflict here as in painting and sculpture.

The theatre leads us through the art of poetry to science. Before, however, speaking of Poetry and Literature we may be allowed a short digression on the Italian language and its dialects.

Italian, like the other Romance languages, Portuguese, Spanish, Roumanian, is derived from Low Latin, but of all of them it has preserved the greatest similarity to the mother tongue. Through foreign intruders the vocabulary of the North was enriched with German, that of the South with Arabic words, making it very difficult for Northern Italians and Sicilians to understand one another. Up to the thirteenth century Latin continued to be the speech of learned men and writers until Dante composed his poem, the Divine Comedy, in the Tuscan dialect, Boccaccio wrote his Novelle, Petrarch sang to his Laura and two centuries later Tasso produced his Jerusalem Delivered in the same. The wealth of words in the Tuscan, its full pure ring, and its capacity for modulation, have given it the pre-eminence among all the dialects and have caused it to assist greatly in the spread of Italian in foreign countries. It is incontrovertibly the most beautiful of the dialects, as it has preserved the endings, placing a full *o* in place of the Latin *us* and *um*; the vowels *e* and *i* are sharply distinguished and are not interchanged at will, the pure *u* is retained, the sibillants are distinctly but not too sharply marked, and the *r* is rolled. The full vowels in the middle and at the end of the words and the small percentage of sibillants make Tuscan melodious and sonorous, so that during the eighteenth century singers and composers preferred Italian to any other language and even now a song in this language gives the fullest play to the music. We may easily recognize the difference between German and Italian in noticing the difficulties in pronunciation as they present themselves to people of the two nations. The Italians cannot aspire the *h* or pronounce a sharp consonant at the end of a word; he says *erre* instead of *Herr*. A German, on the other hand, often finds it impossible to form the soft sibillant, the *o* and the *r* correctly. These, however, are the letters which also vary most in the Italian dialects.

In consequence of the long time during which Italy was broken up, the different dialects have been vigorously kept up until the present time, and have produced a dialectic literature which still flourishes and increases. It is only now that written Italian is beginning to be widely extended and generally understood, through the shifting of officials,

the sending of recruits to different districts and the influence of the elementary schools. This, however, only holds of the men who leave their own towns and go to live among people who speak differently from themselves. Women and children in country places for the most part understand only their native dialects and can therefore neither understand nor make themselves understood by foreigners, or fellow-countrymen from a distance. A foreigner who speaks Italian is not a particle worse off in this respect, say in the villages of the Basilicata, than a Piedmontese or Lombard.

The Piedmontese is characterized by its approach to French, especially in having *ü* for *u*, in having *ö* which is absent from other dialects (e.g. *öf* for *uovo*, egg), and in the increased number of sibilants and nasal sounds. The idiom of Turin sounds just like Provençal. The *ü* and *ö* prevail also in Lombardy near Milan, and in Bergamo, even as far as Brescia, and it is said indeed that its locale corresponds to the portions inhabited by Celts and to the intermixture of Celtic blood. In Lombardy they also cut off many endings and the dialect contains gutturals. The Venetian has full pure vowels and retains the endings but it elides consonants and is somewhat soft in sound and intonation. For instance, they use *d* for *t*, *s* for *c* followed by a vowel, and *v* for *p*, while an initial *c* in such a word as *era* is changed into *giera*, with others of the same kind. Part of the first scene of Goldini's comedy, *I Rusteghi*, is given below as an example. Around Modena also they have the diphthongs *ä*, *ü* and *ö*, as well as the nasal sounds; the soft *n* and *g* and an *sg* instead of the soft *s*, (*quasgi* for *quasi*), and frequently a *z* instead of *c* (*paze* for *pace*). In the Roman dialect the *a* sometimes changes into *e* with the circumflex accent as *pêrt* for *parte*, *êrt* for *arte*. Of the Genoese we may remark among other things the change of *o* into *eu* (*biscugno* for *bisogno*) and the dropping of an *r* between vowels (*bandèa* for *bandiera*).

## I. RUSTEGHI

(C. Goldoni, *Commedie scelte*, 1880, pp. 121, 122).

## Scena Prima

Luc. Siora madre.	Signora madre.
Mar. Fia mia.	Figlia mia.
Luc. Debotto xé fenio carnaval.	Adesso è finito il carnevale.
Mar. Cossa disseu che bei spassi che avemo abuo?	Cosa dite che bei spassi abbiamo avuti.
Luc. De Diana! gnanca una strazza di commedio no avemo visto.	Per Diana! Nemmeno un pezzo di commedia abbiamo visto.
Mar. Ve feu maraveggia per questo? Mi gnente affato. Xé de- botto sedese mesi, che non maridada; m'alo mai menà in nessun liogo vostro sior padre?	Vi fate maraviglia per questo? Io niente affatto. Sono adesso sedici mesi che sono maritata; m'ha [egli] mai menato in nessun luogo vostro signor padre?

Luc. E si sala ? No vedeva l'ora. Che el se tornasse a maritar ; co giera sola in casa, diseva tra de mi : lo compatisso sior padre ; do nome vol menar nol gh'ha nissun da mandarme ; se el se marida, anderò co siora maregna. El s'ha torna a maridar, ma per quel che vedo, no ghe xè gnente nè per noi, nè per ela.

Mar. El xè un orso, fia mia ; noi se diverte elo, e noi voi che se divertimo gnanca nu. E si save ? Co giera di maridar ; dei spassi no me ne mancava. Son stada arlevada ben. Mia mare giera una donna sottila, e se qualcosa no ghe piaceva, la saveva ciar, e la saveva menar le man. Ma ai so tempi la ne dava i nostri divertimenti. Figurarse l'autunno se andava do, o tre volte al teatro, al carneval cinque o sie. Se qualchedun ghe dava una chiave da palco, la ne menava all' opera, se no alla commedia, e la comprava la so bono chiave, e la spendeva i so boni bezzeti. La procurava de andar, dove la saveva che se fava delle commedi bone, da poderghè menar de le fie, e la vegniva, con nu, e se divertivimo. Andevimo, figurarse, qualche volta a reduto, un pochetin sul Liston, un pochetin in piazzetta de le stroleghe, dai buratini e un per de volte ai casoti. Co stevimo in casa, gh'avevimco sempre la nostra conversazion. Vegniva i parenti, vegniva i amici, anca qualche zovene ; ma no ghe giera pericolo, figurarse.

E si, sapete ? Io non vedeva l'ora che egli si rimaritasse. Quando era sola in casa, diceva tra me. Compatisco il signor padre ; egli non mi vuole menar, non ha nessuno per accompagnarli ; se egli si marita, anderò colla signora matrigna. Egli s'è rimaritato, ma per quel che vedo, non c'è niente ni per me, ni per Lei.

Egli e un orso, figlia mia ; non si diverte egli e non vuole che ci divertiamo neanche noi. E si sapete ? Quando era da maritare, divertimenti non mi mancavano. Sono stata allevata bene. Mia madre era una donna accosta, e se qualcosa non le piaceva, sapeva gridare e sapeva menare le mani. Ma ai suoi tempi ci dava i nostri divertimenti. Figuratevi, l'autunno si andava due, tre volte al teatro, al carnevale cinque o sei. Se qualcheduno le dava una chiave di palco, ci menava, all' opera se no alla commedia e comprava la sua buona chiave e spendeva i suoi buoni denari. Procurava di andar, dove sapeva che si facevano delle commedie buone, da poterci menare delle figlie e veniva con noi e ci divertivamo. Andavamo, figuratevi, qualche volta a ridotto, un pochetin sui Liston, un pochetin in piazzetta dalle astrologhe, dai burattini e qualche volta ai casoti (del lotto). Quando stavamo in casa, avevamo sempre la nostra conversazione. Venivano i parenti, gli amici, anche qualche giovane, ma non vi era pericolo, figuratevi.

Southern Italy and Sicily form one whole with regard to language, the *o* becoming *u* and the *c* becoming *i* regularly; *u* is also found instead of *o* in Sardinia, in all cases, indeed, it is the closed *o* which thus becomes *u*. The language of Naples does not sound well, as it cuts off all endings, and frequently unaccented syllables at the beginning of words as well, so that only a miserable fragment of the word remains. The consonants *l* and *r* are interchanged, *Garibaldi* becoming *Gari-bardi*, and *colpa* becoming *corpa*, *nd* is corrupted into *nu*, *al* into *au* (*autro* for *altro*), *cc* into *zz*, *fiu* into *sciu* (*sciume* for *fiume*), *piano* becomes *chiano*, etc. Transposition takes place: *Crap* for *Capri*, *crapa* for *capra*. In the Lecce district *g* is pronounced soft, almost like the German *j* (English *y*) as in the Berlin dialect (*iaddina* for *gallina*). The

Sicilians have properly only three vowels, *a*, *i*, and *u*, which makes Sicilian songs monotonous. It is a peculiarity of Southern Italy, especially Calabria and Sicily that *ll* is replaced by *dd* (*iaddina* for *galina*, *biddizzi* for *bellezze*, *cavaddu* for *cavallo*). As an example of this dialect we give the three first stanzas of Meli's poem "L'Occhi" (The Eyes).

## L'OCCHI

Ucchiuzzi niuri	Occhi neri	Black eyes, black eyes,
Si taliati	Se guardate	At a glance from you
Faciti cadiri	Fatte cadere	Houses fall down
Casi e citati.	Case e città	And cities too.
Ieu muru debuli	Io muro debole	Weaker am I
Di petri e taju	Di pietre e creta	Than a wall of stone,
Cunsideratilu	Consideratelo	Only consider,
Si allora caju	Se allora cado	Will that fall alone?
Sia arti maggica	Sia arte magica	Whether by magic
Sia naturali	Sia naturale	Or natural art
In vui riplendinu	In voi riplendono	Your exquisite beauty
Biddizzi tali	Belezze tali.	Enraptures my heart.

A considerable number of Arabian and Albanian words are intermingled with the Sicilian, and Spanish, especially from the Catalanian dialect, with the Sardinian. The preservation of the *u* and to some extent of the *e*, the *t* in the third person singular and the *h* which has disappeared in other dialects cause the speech of the Sardinians to sound very much like Latin. Then the *j* remains and the *g* or *gh* before *e* and *i*, while *v* and *b* are interchanged. The proverb, "*Qui hat dinari, tenet, quanto querit*" (He who has money, gains his suit), may serve as an example. The change of *e* into *i* may be due to the influence of Byzantium on the South of Italy as the same change takes place in Greek. In Naples a small island is called *nisida*, which doubtless comes from *νῆσος*. Here follow a few proverbs, taken from the Pitre collection, to illustrate the characteristics of the several dialects.

Can che abbaja, morde poco.	Tuscany.
Cani ch' abbaja assai, muzzica pocu.	Sicily.
Cane ca baja assai, mozzica pocu.	Lecce.
Cane ch' abbaia, muzzica poco.	Naples.
Cane mudu appizzigat	Sardinia.
U cane che piu abbaghia, nun' è quellu che piu morde.	Corsica.
Can che abbaia, mai non morde.	Marches.
Can ch' abaja nu morsa.	Rome.
Can ch' baja en mosga.	Bologna.
El can che baja, nò l'è quell che mord.	Milan.
Cà che baja no pia miga.	Bergamo.
Ca che baia pia miga.	Brescia.
Can che bagia, no morsega.	Venice.
Il chian ch ai bae, nol muard.	Friuli.
Can ch'a baola, a mord neu.	Piedmont.
Barking dogs don't bite.	

Qui non trabagliat in juventude, pianghet ad sa bezzesa. He who works not in youth, weeps in age.	Sardinia.
Chi gioca non dorme. Qui jogat non dormit. Chi zôga nô dorma. Cu' joca nun dormi. He who plays sleeps not.	Tuscany. Sardinia. Bergamo. Sicily.
Il giuoco corto è bello. Ogni jocu dura pocu. U juocu è nu pocu. Un poc d' zug è pu bèll. El zoèugh l'è bell quand l'è curt. L'è bèl el zogh se l'düra poch. El zög l'è bel quando l'è cürt. Ogni scherzo curto, xe belo. A short game is a good one.	Tuscany. Sicily. Calabria. Bologna. Parma. Bergamo. Brescia. Venice.
L'ommo non se misura a parme. L'omine non si misurat a palmos. L'ommi nu si misuranu a palmi. I ommi no se mazûan a parmi. I omen se mesuran minga col brass. I òmegn s'i misûra miga a bras. I omeni no se misura col brazzoler. I òmini a s' mesuro non a brasse. Men are not measured by the yard.	Naples. Sardinia. Corsica. Genoa. Milan. Bergamo. Venice. Piedmont.

The inhabitants of the upper section of the Dora Riparia Valley and in the valleys of the Clusone and Pellice speak a dialect peculiar to the district.

These different dialects have a varied literature. Songs, romances, dramas, novels have been written in them and there are a few well known poets in dialect whose songs are still sung and dramatists whose plays are still acted. Goldoni (1707-1793), of whom we have given a specimen, composed a number of comedies in the Venetian dialect, Belli (1791-1863) composed sonnets in that of Rome. Porta (1776-1826) wrote in the Milanese, Brosserio (1802-1866) in the Piedmontese dialect. Among the newer authors we may name Gallina, Marini and Pascarella of whom the first wrote in the Venetian idiom, while the two others use the Roman. Songs and ballads in the popular speech for itinerant singers or mandoline players are brought out by hundreds and are to be bought or to be heard everywhere, and the South, Sicily and Naples are great in these.

A famous book written in the Neapolitan language is the collection of fairy tales by Basile (died 1647), in which a number of popular tales and jests are thrown together into a Pentamerone, i.e., stories related during five days. The title is *Il Pentamerone ovvero lo cunto de li cunte*. This work has been many times translated into German. Meli (1740-1815) was a Sicilian poet, the greatest indeed whom the island has produced. His *Puisii siciliane* (*Poesie siciliane*) are continually re-

produced ; they have been translated into the written Italian language, and some of them into German (by Gregorovius). The works of Pitré in sixteen volumes are of importance for the Sicilian language, and for the manners and usages, etc., of the island. In them popular songs, proverbs, romances, nursery rhymes, and superstitions have been collected with enormous energy, forming a pattern work, such as unfortunately does not exist for any other part of Italy.

The *Lingua Franca*, the prevailing trade language in the East, which has for centuries rendered trade with the Moslem possible, is derived from the Italian language through the numerous colonies of the Venetians, Genoese and Pisans at the time of the Crusades. First in the East, and later in the West, Italian held the position of a universal language till it was supplanted by French ; for some centuries it has been receding even in the East.

There is no institution completely corresponding to the French *Académie*, though part of its functions are discharged by the *Accademia della Crusca* in Florence, founded in 1485, its chief duty being the publication of an Italian dictionary, using the Tuscan dialect. This Academy, abolished more than once in the course of time, and reconstructed, enjoys a certain repute in the country in spite of much hostility, and since 1863 it has compiled a new edition of the dictionary.

The Romans were, with a few exceptions, such as Tacitus, imitators of the Greeks or Alexandrians, but endeavoured in their way to produce works which should be perfect in form, and this Horace, Cicero, Terence and Catullus succeeded in doing. In the times of the Cæsars this imitation was carried to an extreme and all originality disappeared.

Literature was first revived in the thirteenth century by Dante Alighieri, who in his immortal work the *Divine Comedy*, wrote down the ideas of the Middle Ages in the national language and with the hand of a master. This poem, unique in every respect, has since the time of its production found innumerable commentators, translators and imitators. The *Divine Comedy* has been printed in the original over 500 times and has been translated into every literary language, sometimes in poetry, sometimes in prose. His other and smaller works, partly in Latin, such as the *Vita Nuova*, a collection of poems to his lady love, and his controversial writings on politics, served as starting points for the resuscitation of these different species of composition. Beatrice, of whom Dante was enamoured, and Laura, whom Petrarch worshipped, are almost national saints in Italy, and have become the incarnations of ideal Love. Petrarch, a somewhat younger poet (1304-1374), passed his life like Dante in different courts and several

cities. By him interest in classical antiquity was awakened and at the same time by his "Rime" and "Canzoniere," a lyric poetry was created, which has served as a pattern, still enchanting the young men in Italy, who rave with the poet about Laura. Giovanni Boccaccio, also a Tuscan, and a contemporary of Petrarch, was born in 1313 and died in 1375. He wrote romances and novels, and his fame rests on the *Tales Told in Ten Days* (*Decamerone*). Fifty years after the death of Dante his paternal city perceived what she had possessed in the great citizen whom she had banished, Boccaccio was commissioned in 1373 to write a commentary on the *Divine Comedy*, and devoted himself until his death to this task and to a biography of his great countryman. Some years ago a Dante Society was formed on the model of similar societies in England and Germany, who apply themselves to carrying on investigations. Then Dante is looked upon as a symbol of Italian nationality in those Austrian provinces where the people is Italian, a statue has been erected to him in Trieste, and it is one of the duties of the Dante Society to see to the maintenance of the Italian language in the provinces where its existence is threatened.

The new interest in antiquity revived the study of Greek, and Boccaccio had a large share in extending the knowledge of this language among the learned and educated and thus rendering possible the literary efflorescence of the Renaissance in the fifteenth and sixteenth centuries. Educated men busied themselves with all kinds of classical studies in the fifteenth century and created an extensive body of learning with refinement of taste. The romances of chivalry arose during the second half of this period and found imitators in all countries. Bojardo (1434-1494) wrote the *Orlando Innamorato*, an epic, and Ludovico Ariosto (1474-1533) linked on to it the *Orlando Furioso*. By this poem, which was admired by the whole world, Ariosto was raised into a position among the first of Italian poets and largely influenced French and still more Spanish literature. The last of the series was Torquato Tasso (1544-1595), with his *Jerusalem Delivered*.

It is a peculiarity of this time that all these great writers had no settled position of their own but led a roving life, now at the court of a prince, now as travelling companion of a duke or a cardinal, but ever dependent on the favour or accident of some Mæcenas or other. It is true that the Medici at Florence, the Dukes of Este at Ferrara, the Princes of Milan as well as many of the Popes showed themselves to be highly educated people, who advanced and vitalized every region of knowledge, but Tasso's mournful end shows that under some circumstances art and the artist had to suffer from heavy oppression.

The romantic epic of chivalry was still fashionable when a new species of composition arose, pastoral poetry. Tasso and some of his predecessors were the founders of this elegant style, which only too soon degenerated into pomposity and absurdity. By means of the Italians, who were then favoured at all courts, the pastoral drama and pastoral lyric poetry made their way through Europe and maintained themselves there till the middle of the eighteenth century. Tasso's *Aminta* and Guarini's (1537-1612), "*Il Pastor fido*," served as models to countless imitators.

The tales and poems of a somewhat younger Italian, Giambattista Marini (1569-1625), created the pompous style known in England as Euphuism, which consisted in the description of the commonest things with high-sounding expressions carried on *ad nauseam*, but almost the whole seventeenth century was good in tone. Of the following period we have specially to name Goldoni (1707-1793), who wrote over 200 plays and was indeed the most fertile author of the country, and Pietro Metastasio (1698-1782), who wrote numerous libretti, lyric dramas and cantatas. Otherwise the eighteenth century was a period of degeneracy in Italian poetry until at the threshold of the nineteenth century an important dramatist arose in the person of Vittorio Alfieri (1749-1803).

Among poets of our own time we have to name as no longer living Manzoni, Leopardi and Giusti as representing romance, melancholy pessimism and satiric political lyric poetry respectively, and of those still alive Edoardo d'Amicis, who writes romances and descriptions in a flowing flowery style, Gabriele d'Annunzio, author of realistic romances, and Salvatore Farina, who describes family life, with many others. In the representation and unrestrained description of existing circumstances, romance pays homage to "verismo," following the French and Scandinavians, but the language is choice and the form artistic, as the culture and taste brought to perfection in the course of centuries will not permanently endure anything else. Authors are rather more likely to fall into the mistake of a too flowery bombastic speech, as we see in the case of Matilda Serrao, a representative of these though in a good sense. A. Fogazzaro, who is looked upon by many people as the greatest living novelist, stands alone in this mingling of extreme realism with far reaching idealism.

Lyrical poetry finds its chief representative in G. Carducci; but poetising is far more commonly spread in Italy than in Germany. Improvisation is even practised as a kind of art, the melodious language with its endings which seem created for rhyme, directly inviting it. Table companions delight in the game of making verses; sometimes an event of the day is sung in a free manner, sometimes an improvisor

has a given rhyme to which he has to make a sonnet or other short poem. One characteristic form of lyric found with the favourite sonnet is the *ritornello*, of which thousands have been composed and thousands more will be composed to express exuberant love or hatred or fun. It consists of three lines, the first of which repeats a short expression, often the name of a flower, the two other being longer and the last rhyming with the first. Then *Terzine* and *Ottave*, as their names imply took their rise in Italy and are still much employed.

Science owes the whole of its rise to Italians. In this, as in Art, Politics and Trade, Italians at one time played the leading part. The knowledge of Greek in the West, the rediscovery and printing of the classical authors and the earliest critical work upon them are due to Italy, especially Florence. Even at the present time the Laurentine Library with its treasures of chained books reminds us that the Medici shrank from no trouble or expense in bringing together such of the intellectual productions of the Greeks and Romans as had endured through the times of the Migration of the Nations and narrow-minded theology. Venice has an equally valuable collection in the Marciana, and so has the Pope in the Vatican Library, to which the codices formerly in Heidelberg were carried off as booty during the Thirty Years' War.

Studies in classical antiquity have been common in Italy since the nineteenth century, all the more, as the soil is constantly supplying new material in the way of inscriptions, coins and objects of art, as well as ruins. Through the discovery of the two ruined cities of Herculaneum and Pompeii in the middle of the eighteenth century these investigations, which were getting to be looked on as monotonous and petty, received a new and fruitful impulse. Not only the remains and documents of ancient, but also those of medieval and modern history have received close consideration at the hands of Italians, so that there is no other European country with so great a wealth of topographical writings of every kind. This fondness for antiquarian research flourishes still without diminution, but the money and the knowledge necessary for the work are no longer forthcoming, so that Italian investigations are often surpassed and improved upon by those of foreigners.

Since ancient times a part of this scientific life has been concentrated in special societies, the Academies, of which the *Accademia della Crusca* (1485) is the oldest, having served as a model for the French Academy as well as for most other learned societies. At present the number of Academies in Italy is still large, although many have come to an end in course of time. Many carry on but a poor existence, but others do excellent work and are famous, such as the

*Accademia dei Lincei* at Rome. These institutes suffer for the most part under want of funds, as the old endowments and legacies in their favour have no longer their original value, and the printing of proceedings get more and more expensive. The State gives support only to a small number and, considering its own financial needs, cannot help more substantially. Thus it happens that in many Academies the activity is confined to the occasional reading of essays and the printing of the minutes of meetings. The most important Academies are the following :

TURIN.—*Accademia delle scienze*, founded in 1757, publishes *Memorie*, and of late also *Atti*, and is distinguished in the domain of physical science.

MILAN.—*R. Istituto Lombardo delle scienze, lettere ed arti*, of 1820, also a respectable corporation with full and valuable publications.

VENICE.—*Istituto Veneto*, the scientific importance of which has decreased.

VERONA.—*Accademia di Verona* (*Agricoltura, Scienze, Lettere, Arti e Commercio*.)

BRESCIA.—*Ateneo di scienze e belle lettere*.

PADUA.—*Accademia di scienze, lettere ed arti*.

MODENA.—*Accademia delle scienze*.

FLORENCE.—Besides the *Accademia della Crusca*,

1. The *Accademia del Cimento* from the year 1657.

2. *Accademia del Georgofili* whose objects since 1752 have been Agriculture and its improvement.

ROME.—1. *Accademia dei Lincei*, which is divided into several classes, embracing all branches of knowledge ; it publishes proceedings and reports of its meetings, offers a number of prizes, and is the first of all societies of the kind. Once a year a public sitting takes place in the presence of the King and Queen. This institution is derived from the papal academy founded in 1603 and taken over by the modern State. On this Pope Pius IX., with the learned men who remained true to him, founded the

2. *Accademia pontificia dei nuovi Lincei*, whose publications, however, are in no way equal to those of the first-named.

3. There still exists in Rome, dragging on a miserable existence, the once famous *Accademia degli Arcadi*, of which Goethe was a member. It was founded in 1690, had some importance in the eighteenth century, but is at present completely effete and superseded.

NAPLES.—1. *Società Reale*, constructed in 1861 out of the Bourbon Academy. It has three classes : *scienze fisiche e matematiche*,

archeologia e lettere, scienze morale e politiche. The older publications of the eighteenth century dating from the time of French rule contain the reports of the excavations of Herculaneum with some very valuable illustrations.

2. Accademia Pontaniana which also embraces the whole circle of knowledge, was founded in 1452 under Robert the Wise by the Humanist Giovanni Pontano, and was renovated later. It has now five classes and issues several publications.

CATANIA.—Accademia Gioenia, founded in 1823 in honour of Gius. Gioeni the Physicist.

PALERMO.—Accademia Reale.

Besides these there are the Società Ligustica at Genoa, the Società Toscana at Pisa, and similar societies at Udine, Rovigo, Lucca, Siena, Cosenza, Messina, Palermo, etc.,

This Academic life is a characteristic trait of the scientific world, binding the great past with the less productive present. One of the duties of the academies, that of describing and taking charge of archæological treasure-trove, has been taken out of their hands and placed in those of a special commission, whose reports are printed in the Proceedings of the Accademia dei Lincei. At the same time the State has appropriated the management of most of the public museums and galleries and has published descriptions of a considerable part of the remains of ancient buildings or excavations, and takes care that they are guarded and kept in good condition. The collections of the Vatican and the Lateran of course remain the property of the Papal See, but the transportation of works of art is opposed by the Government and they have carried a law forbidding the sending abroad of objects of historical or artistic value without previous inspection by the officials of some museum, who must give their consent to the removal. The State also possesses a right of pre-emption, but this, owing to want of money, is but seldom exercised. These laws were made use of in preventing the sale of the Galleria Borghese, but have not been able to prevent some valuable pictures from finding their way abroad.

Among art collections of the first rank are the Brera at Milan, the Academy of Fine Arts at Venice, the Uffizi galleries, the Pitti Palace and the National Museum at Florence. Rome has such a number of museums and private galleries that it is difficult to single out particular ones. We shall only adduce the collection of sculptures and pictures in the Vatican, the Museum of the Capitol and the Torlonia galleries. The National Museum at Naples contains the countless objects of domestic and textile interest found in Pompeii and Herculaneum, as well of the most famous collection of Greco-Italian vases from

the tombs of Campania and Apulia. Sicilian, Phœnician, Greek, and Medieval monuments are brought together at Palermo. The Etruscan Museum at Bologna and the collection in the Villa of Pope Julius II. form a good introduction to the study of pre-historic Italy. Besides these, many towns, such as Pavia, Modena, Orvieto, Viterbo, Capua, Syracuse, Catania and others, have their local collections, many of which are of the greatest value for special researches.

It is not to be denied that a more earnest spirit has prevailed since 1870 in the region of Archæology, and that much industry and money have been bestowed upon it, though it is true that much still remains to be done. The discoveries are carefully described in the *Notizii degli scavi*. An illustrated paper, *Napoli nobilissima*, devoted to medieval and more recent art, especially architecture, has appeared for some years past, which opens up a rich and delightful field of labour. In Rome, besides native archæologists, numerous foreign savans are active; these are connected partly with German and partly with French archæological institutes. The latest work of the Accademia dei Lincei, one which is not quite completed, is a plan of Ancient Rome from the ruins that have been examined and determined up to the present time, beautifully and clearly executed to the scale of 1 to 1000. Historical investigations are being carried on at the same time by some foreign institutions, German and Austrian, which have their headquarters in Rome, as the archives of the Vatican with its endless documents contain treasures which are far from being exhausted. We have already spoken of the study of jurisprudence, when speaking of the Universities.

The exact sciences have also produced in the past some names of the first rank in the history of culture. We can only mention Galileo Galilei (1564-1642), one of the greatest students of nature of all time, whose far reaching discoveries in astronomy and physics laid the foundation of our present system of the Universe. His tragic fate and his ill-treatment by the Church that felt its dogma threatened are well known. Leonardo da Vinci was another important physicist, as was also Evangelista Torricelli (1608-1647), to whom we are indebted for the barometer, and lastly we must name in this connexion Alessandro Volta (1745-1827) and Luigi Galvani (1737-1798) on whose discoveries rests the whole of our present electrical art. In more recent times the astronomers Schiaparelli and P. Secchi have performed work worthy of notice in their observations of Mars and the Solar faculae.

In Medicine the schools at Salerno were renowned through the world for centuries during the Middle Ages, as they had received the Aristotelian knowledge of nature from the Arabs, and employed it

in practice. Together with many superstitious ceremonies and quack remedies they studied astronomy earnestly and this remained for a long time a palladium of Italian science. From it was developed physiology, and in this, besides Volta and Galvani, Malpighi (1628-1694) was of service as he was the first to follow the course of the blood with the microscope; he also studied the structure of the nerves and carried on acute observations in embryology.

Several Italians have endeavoured to embrace the whole circle of knowledge and to give rules for the governance of the State and of life from a theological or philosophical point of view. The mightiest of these thinkers seems to have been Giordano Bruno (1548-1600), who so ruthlessly laid bare the abuses and heresies of the Church that he was imprisoned and, refusing to recant, was burnt as a heretic on February 17, 1600, in the Campo di Fiori, where his monument now stands. Many of his teachings in Geography and Natural History sound quite modern and show how far the man was in advance of his times.

From what has been said it is not surprising that the Italians were the most cultured people of Europe in the seventeenth century and at the beginning of the eighteenth, and that other nations endeavoured to learn from them as the nations outside Europe now do from the Germans, English or French. Italian artists and diplomatists had unlimited sway over the Courts and the taste of the time, so that many of the most enlightened men of the small states left their homes in order to gain abroad a wider field of work together with wealth, high position, and honour. France especially was a land where these people felt at home when the Medicis reached the throne in the persons of the Queens Katharina and Maria dei Medici. The Académie Française owes its existence to this influence. Cardinal Mazarin, the successor of Cardinal Richelieu its founder, was an Italian by birth and held almost unlimited power in France for eighteen years. The all-powerful Spanish Minister Cardinal Alberoni (1664-1752) is another example. He strove in conjunction with Elizabeth Farnese to introduce enlightened government and beneficent reforms until the destruction, in 1719, of his far-seeing plans for the transformation of Europe drove him into banishment. Shortly afterwards the singer Carlo Farinelli (1705-1782) played a conspicuous part at the Spanish Court, having to sing before the melancholy Philip V during ten years (1717-47), at the end of which time he became his minion and Prime Minister. Side by side with men of this stamp there were of course many swindlers and intriguers who plundered the countries and worked themselves into exalted positions by machinations of all kinds. Benvenuto Cellini may perhaps be considered as belonging to this species and also the nieces of Mazarin, one of whom became the mistress

of Louis XIV, and we may mention lastly Cagliostro (1743-95) who with his alchemy, necromancy and Egyptian freemasonry, did much mischief throughout Europe, especially in France.

People of this kind at last discredited the Italians in the eyes of foreign countries, so that there was little sympathy for them until the risings of 1848 and 1860. The valour, the devotion, and the ideal enthusiasm displayed in these years of trial reawakened the old predilection for Italy in the northern nations, and contributed essentially to her success in obtaining her rightful place among the Great Powers.

Science at the present time in Italy does not in any branch come up to that of the past. Absolutism in Church and State had destroyed the germ, and the Italians now stand quite in the second or third rank, being surpassed by the northern peoples and even by the Americans. None of the great discoveries of recent times have originated in Italy,<sup>1</sup> and instead of doing solid work there is often, unfortunately, only bombastic speechifying which exalts what is unimportant or even false into results of the greatest importance in quite a laughable manner. Mantegazza and Lombroso are representatives of this, as well as many of the advertising doctors. More serious and scientific efforts have been noticeable of late in the teaching of Philology and Natural History, so that a return to a less ornate style and a more concise treatment of disputed questions may, it is hoped, be anticipated.

The press is a factor of extraordinary importance in the life of the Italian people. Springing at first from the written trade reports in Venice it has been gradually developing in the course of the last five centuries and it even made progress under the pressure of the censorship. Now that reading has become more common even among the lowest strata of the population, the common people buy their newspapers and take a lively interest in the events of the day. Even in the Apennines one may often come across someone reading the newspaper aloud to an attentive audience, who hail every good expression or scoff at a political antagonist with joy or anger.

Even the smaller towns have their printing presses, but newspapers appear only in the larger ones. The copies are, as a rule, sold in the streets at from a halfpenny to a penny apiece and are cried by the newsboys in stentorian tones. As soon as they come out the boys and young men run with them through the streets shouting out the sensational news of the day, and thus inviting people to buy. In the arrangement of matter and the method of reporting they follow the model of French journals.

The most important papers are the *Opinione* and *Tribuna*, at Rome,

<sup>1</sup> Except Marconi's Telegraphy. (Trans.)

*La Perseveranza* at Milan, the *Gazzetta di Venezia*, in Venice, the *Corriere di Napoli* in Naples, and the *Giornale di Sicilia* in Palermo. Of course each party has its organ, thus that of the radicals is the *Secolo* in Milan, which at the same time represents the friends of France. The Vatican has its own prints, the *Osservatore Romano*, the *Voce della Verità*, and since 1893 it has had the *Moniteur de Rome*, written in French for foreign countries. Official communications for abroad have for some time appeared in *L'Italie*, also in French.

In general it is not in any way agreeable to read an Italian paper, as party squabbles take up the greater part of it, and the rest is filled up with local news. Most of them have a feuilleton, but even in the chief papers there is an absence of serious solid articles of general interest and instructive character. Personalities predominate and produce an unpleasant effect on those not accustomed to them. These newspapers, from political considerations or for payment, have no hesitation in making a rapid change of front and attacking the men whom a month before they were lauding to the skies. The importance and sale, often even the price, of the Roman papers will vary with a change of ministry, as after the dismissal of a premier, the next Minister-President makes his own paper the official organ and communicates to it all the official and semi-official information. Thus the *Opinione* and the *Tribuna* have often exchanged their rôles.

Besides the newspapers there are multitudes of periodicals. Among these may be mentioned the *Nuova Antologia*, and the *Civiltà cattolica* which is inspired by the Vatican. The different sciences also have their special organs and the number of these has greatly increased during recent years.

A dignified fluent style and harmonious language are common to all these publications, and it is noticeable that the journalists keep to good Italian, avoiding the horrible penny-a-line style such as occurs in Germany, as it would render the paper an object of ridicule. The most prominent politicians are accustomed to contribute to them.

The *Asino*, a Socialistic organ, and the *Don Chiscotte* of radical tendency, are comic papers. Both have illustrations of bad execution representing to some extent the *Kladderadatsch* but without its finished poetry. There is nothing quite corresponding to the *Fliegende Blätter*<sup>1</sup> as there is no appreciation of harmless wit and humour of this kind. Other publications of the kind are imitations of the French, especially of the *Journal Amusant*, and are full of *double entendre*.

In 1895, 1,901 newspapers and periodicals were published in 261 communes. Of these 23 were in foreign languages, 1798 in Italian,

<sup>1</sup> The *Kladderadatsch* and the *Fliegende Blätter* represent the political and social portions of *Punch* respectively. (Trans.)

and 42 in dialect ; 479 were political, 87 politico-religious ; in 597 the number cost a halfpenny, in 209 a penny and in 252 from three halfpence to four-pence halfpenny. 130 papers appear abroad in the Italian language, 24 in Switzerland, 38 in Austria-Hungary. Malta has 14, the United States 17, Argentina 17, Brazil 6. These are the countries with Italian provinces or many Italian immigrants, and for this reason these numbers do not appear wonderful.

## CHAPTER XVI

### Topography

#### I. LOMBARDY.

THE traveller who in February or the beginning of March descends from the icy heights of St. Gothard towards Italy, hails the south with double delight after the barren waste of rocks or the white snowfields of the Alps, when he meets the cypresses, the first evergreen trees, and the brilliant blue waters of the Lombard Lakes. As he passes from Como or Sesto Calende into the Plain of Lombardy, the meadows are already green, the buds of the poplars and mulberry trees along the watercourses are already bursting, and glad with the consciousness that he is hasting to meet the spring, he reaches Milan (425,000 inhabitants) the capital of Lombardy.

Mediolanum was founded by the Romans on the site of an ancient Celtic settlement. This was destined in later time to be the temporary seat of the Roman Emperors and one of the nursery grounds of Christianity. At the present time, after many changes of masters, Viscontis, Sforzas, Spanish viceroys and Austrian police, it has risen with new prosperity and has become one of the principal centres of trade in Italy through its manufactures, above all silk weaving.

Its broad straight streets, its fine parks on the site of the former fortifications and its palatial buildings give one quite the impression of a city of Central Europe. One is first struck by the custom widely spread among the women of Northern Italy, of wearing a veil instead of a bonnet or a hat. In cold weather this is thicker and drawn closer. Instead of lace the women of the citizen class wear a simple cloth under which the oval shape of the face and the dark eyes stand out well. In other respects what is called Italian life falls somewhat into the background, as the climate is too like that of the northern part of the continent to permit life to be constantly spent in the open air. In winter Milan is often icily cold, in summer it is boiling hot, and in autumn it is troubled with mists that make one cough. It is only the ancient buildings, the cathedral, the collections of works of art that remind the foreigner that he is on classic soil. The chief part of the Roman buildings too have disappeared, though sixteen Corinthian columns of a fourth century portico still rise up in the *Corso di Porta Ticinese* among the busy streets. Close behind lies the ancient octagonal church of St. Lorenzo, one of the few octagonal buildings of the period of transition from heathendom to Christianity, like the cathedral

of Aachen<sup>1</sup> or the early Christian buildings in Ravenna. Not far off stands, somewhat below the level of the streets, the church of St. Ambrose (San Ambrogio), where the Father of the Church is said to have shut the door in the face of the Emperor Theodosius on his return from the massacre of Thessalonica, and where the Lombard kings and the German Emperors had themselves crowned with the Iron Crown.

In the middle of the town rises the famous cathedral, the finest building in Italian Gothic, that with its thousands of pillars, large and small, rises to heaven as a proud monument of the city's size and power. The palaces of the Piazza dei Mercanti, hard by, recall the trade of the Middle Ages and the religious wars, as it was on this spot that the first heretics to be burned, the Waldenses, went to the stake. Milan has an important library (*Biblioteca Ambrosiana*) and a collection of paintings (*Brera*) containing *Lo Sposalizio* of Raphael, a picture of singular golden tones, charming in composition and colour. But its greatest treasure is the Last Supper, by Leonardo da Vinci, unfortunately very ill preserved, in which the excellent portrayal of the bearing and countenances of the disciples is such as has been attained by no later painter.

The Milan of to-day is a prosaic manufacturing town, the only varied life being concentrated around the cathedral and in the Galleria Vittorio Emanuele. On climbing the roof of the cathedral in clear weather we gain the most splendid view over the wide Plain of Lombardy. All round beyond the sea of houses stretches the wide green area rising slowly in the north to the hilly country of Como with the terraces of the Adda near Monza, and through this to the spurs of the Alps, the Alta Brianza and the mass of Grigna. Numberless water-courses lined with trees traverse the gentle slope from the mountains to the Po, while the stony course of the Adda stands out in bolder relief as well as that of the Ticino in the distance.

In the neighbourhood of Milan are seen the straight lines of the canals belonging to the Naviglio Grande, and numerous villages and single homesteads surrounded by well used kitchen gardens lie amid the luxuriant green meadows and cornfields. In early spring the land is often under water, because the meadows protected against winter frosts by being flooded have not had time to dry up. High roads run from Milan in all directions, one of them leading us northward through Monza, the summer residence of the King, back to the foot of the mountains whose snowclad summits, from Monte Viso to the Ortler Spitz, bound the view from the cathedral of Milan in this direction.

The Lakes of Lombardy are like jewels set in the rugged, lofty mountains, and are girt on the south with dark luxuriant vegetation.

<sup>1</sup> Aix la Chapelle. (Trans.)

The Lago Maggiore is unique in character; it is, to a certain extent, only the deeper prolongation of the Valley of the Ticino near Bellinzona, and is slowly being filled up. The Tosa, which descends from the Simplon, falls into its short western bay. At the northern end, between the deltas of the Ticino and the Maggia, lies Locarno, a place of importance in the Middle Ages, where figs, pomegranates, olives and myrtles grow in sheltered situations. Further south, where the lake forks, Pallanza, a much frequented health resort, picturesque and sunny, looks towards the south, and in the lake in front of it are the charming Borromean islands, on which flourishes an almost Neapolitan vegetation. Somewhat further south, opposite Pallanza, is another favourite health resort, Stresa, from which the islands may also be visited. Along the east of the lake runs, first in Swiss and then Italian territory, the railway from Bellinzona to Genoa, entering the varied undulating marine country near Sesto Calende at the outlet of the lake.

The valley of the Tosa leads us first over wide green meadows in a westerly direction to Monte Rosa, and then with a sharp turn northward to Monte Leone. The marble quarries at Ornavasso, the cotton factories, as well as scattered mines show us that the treasures of the soil and the water power are largely made use of by the industrious inhabitants. The chief place is Domo d'Ossola, a small and prettily situated town where the road over the Simplon branches off. In the upper section of the valley the Tosa falls over a cliff of gneiss and forms one of the most magnificent waterfalls in the world (see p. 102). Going higher up the valley and turning south over a low barrier we reach the Lago d'Orta, the smallest of the Italian lakes, buried among the wooded spurs of the Alps and drained by the Strona, which runs northward into the Tosa. This mountain watercourse is made use of by the railway from Novara to the foot of the Simplon, the continuation of which to the valley of the Rhone by a mountain line similar to that of the St. Gothard, and avoiding the highest passes by a long tunnel, has been lately undertaken and is to be completed early in the twentieth century.

East of Lago Maggiore extends towards the south the Varese, a district of lakes and swamps which, if we disregard the absence of the high mountains, reminds us in many parts of the Baltic lake districts in the formation of numerous lakes originally with no outlet. Deeper in the mountains we find the beautiful Lake Lugano, which is drained into Lago Maggiore. With little breadth this lake has an irregular ragged shape so that its different sections almost constitute separate pieces of water. The dolomite mass of Monte Salvatore rises between the two chief arms of the lake, and gives a glorious view over the im-

mediate neighbourhood and the chain of the Alps. The little town of Lugano stands on an elevated terrace at its foot and has a splendid prospect of the eastern part of the lake and the whole ridge of Monte Caprino behind. It is still Swiss as the frontier line describes wonderful curves in this region. The Gothard railway reaches this lake from the valley of the Ticino by the tunnel of Monte Cenere, it then follows its western bank, crosses the water at Melide on a long viaduct, and reaches Italian territory at Chiasso.

The form of the eastern part of Lake Lugano resembles Lake Como but the latter is on a larger scale. At the two ends, near Como and Lecco, we meet with one of the most flourishing industrial districts of Italy; at Como especially spinning and weaving factories lie close together in a long procession. The triangular mountain surrounded by the arms of the lake, the Alta Brianza, ends in the north with the wonderfully green point of Bellagio set with villas, and from the summit of this, Monte Crocione with the houses and villages at its foot, on the left, the lake stretching out in front and the bare rocky masses of the Gregna on the right form a most beautiful landscape. It is a corner of the earth that is like a little paradise, and its brightest points, the Villa Carlotta, the Villa Serbelloni, the Villa Melzi, have every right to the fame they enjoy. The most northern part of Lake Como is already being filled up and changed into a swampy meadow by the Adda, leaving as a remainder the Lago di Mezzola by the lower part of the road over the Splügen (cf. map p. 106). Above this, Chiavenna in the valley of the Liro commands the roads to the Rhine and the Engadine; it is still surrounded by vineyards and chestnut woods which have to give place higher up at Campo-dolcino to the naked debris brought down by the river.

From the mouth of the Adda towards the east stretches the longitudinal valley of the Valteline the slopes of which supply the widely used red wine. The chief town is Sondrio, at the foot of the Bernina group. The upper bed of the Adda between this and the Ortler, and running north and south, contains the old trade route to the Inn over the Wormser Joch and contains the beneficent baths of Bormio. From the Valteline one can reach Edolo on the Oglio by a pass into the Val Camonica. Following this valley road we pass along the valley of the Sohle, getting broader and broader, among meadows and cornfields, vines and mulberries till we come to the north end of Lake Iseo at Lovere. Although less visited than the other lakes, it is not inferior to them in charm in its central part, which is broken by the island of Montisola, but resembles Lake Garda in character, having in common with it that its southern end broadens out and is situated among less elevated hills.

At the frontier between Lombardy and Venice we find the Lago di Garda, the last of the great lakes of northern Italy, with its point in Austrian territory. It is girt with lemon gardens, chestnut woods and vineyards, and is the goal of many tourists who come in spring and autumn to Arco, Riva, Gardone and Salo to enjoy the glorious nature, the long snowclad lines of Monte Baldo and varying colours of the lake. Arco and Riva are looked upon as winter resorts on account of their position, which is protected from the north winds, but in summer, when the strength of the southern sun burns up the narrow valley they are usually hot and dusty. The broad southern end of the lake is divided by the narrow peninsula of Sermione into two bays, on one of which lies Desenzano, and on the other the fortress of Peschiera, closing the outlet of the lake. The hilly country to the south and south-west has repeatedly been the scene of decisive battles. The battle of Solferino took place there in 1859, and that of Custozza in 1866, for on account of the Mantuan marshes there is only this one road for an army from Lombardy to Venetia. Hard by but east of the Mincio lies Villafranca, known by the preliminaries of peace concluded in 1859 between Napoleon III. and Francis Joseph.

The cities of Bergamo and Brescia are built in what used to be very strong positions between the Adda and the Mincio. Formerly powerful members of the confederation of Lombard cities, they have preserved to the present time a vigorous activity. Brescia "armata" is an ancient city surrounded by walls and dominated by a castle; its centre is the cathedral which consists of a very old and a very new portion. Close by it is the ancient market place (*Piazza vecchia*) whence the main streets radiate. Everywhere in the town may be seen fountains with flowing water, and there is busy life in the narrow lanes. The speciality of the place is the manufacture of weapons of every kind, and indeed the city was renowned in the Middle Ages for preparing the best sword blades. Its strong situation enabled it to preserve its independence for a long while till Venice, after a long struggle with the Dukes of Milan, made Brescia the chief bulwark of the "*Terra ferma*." In the antipapal movements of the Middle Ages, Arnold of Brescia played an important part, but was overthrown by force of arms in 1155, and perished at the stake in Rome. Brescia made a name for herself in the history of art by the works of Aless. Buonvicino, called Moretto (1498-1555), and preserves some excellent pictures of this master in the churches and picture galleries.

This city is the terminus of the traffic from the Val Trompia, where there are important small arm factories at Gardone, with iron mines and charcoal-burning higher up. She also shares with Bergamo in the

trade of the Val Camonica, and is connected by many tramways with both valleys as well as with the plain. In consequence of this lively exchange of goods the walls both of Brescia and Bergamo have become too narrow, and many populous suburbs have sprung up, especially in the direction of the plain.

Bergamo at the entrance of Val Brembana is the seat of an important silk and wool industry, partly established by Swiss. From the upper town, which lies high and is closely confined by walls, a beautiful view is obtained over the Lombard Alps with their carefully kept vineyards, the wooded heights and grey limestone crags of the middle valley and the Valteline ridge often covered with snow. The lower town with its factories is full of life and bustle. A fair is held on an open space with numbers of booths, and on market days the vehicles of the country people throng the suburbs, as troops of them stream in from far and near, often in their national costumes. In autumn the open places present a variegated and truly Italian picture, with the different kinds of fruit and vegetables, and the people with their picturesque costumes, and their lively gesticulations. The harmlessness of the scene, however, is rapidly disappearing with the extension of manufactures, through the constantly increasing republican and anarchist propaganda, as the discontented elements become more and more prominent. This powerful and increasing tendency on the part of the working classes and the smaller peasants or farmers to social democracy and communism is the inconvenient and, for the time, unavoidable result of the factory system and the tenure of land, and its danger has been shown repeatedly by revolts in Bergamo and Brescia, the last occasion being the rising of the Milanese in May, 1898, which was only repressed with much bloodshed.

In the plain watered by the Brembo, the Chiese, and the Oglio, a plain of cornfields and meadows, we may name Lodi as the centre of the cheese manufacture, the town known to history by the victory of Napoleon over the Austrians in 1796. On some islands on the Mincio, protected by outworks, at the point where this sluggish river spreads out into swamps and lakes, stands Mantua, the ancient and renowned fortress, second of importance in the Veronese quadrilateral. Our national song keeps alive the remembrance of the shooting of Andreas Hofer, which took place here, while investigations of the learned suppose it to be the birthplace of Virgil. The city takes an honourable place in art through the works of Giulio Romano, especially the Palazzo del Tè before the gate. In the Middle Ages it was the capital of a principality like Milan and Ferrara, and was made by the Gonzagas a rendezvous of remarkable men, until it came into the possession of Austria, under whom it remained till 1866.

Pavia and Cremona lie on the Po. The latter was a Gallic settlement, and became Roman after the Second Punic War ; it has beautiful palaces in the Gothic and Renaissance styles. The Piazza del Comune is in characteristic Lombard architecture, with the Cathedral, the Palazzo Pubblico, and the Torrazzo, a tower 120 feet high, all three of the best time of Northern Italian Gothic. Cremona enjoys universal renown for its violin makers, Amati, Guarneri and Stradivari. It is at present a little town lying in the midst of a highly cultivated and fertile country, and has some cloth and silk manufacture. Pavia, on the Po, just before the confluence of the Ticino, was the capital of the kingdom of the Lombards, and at a later time was one of the most renowned universities. Such it is even yet, though its importance as a centre of trade and as a fortress has departed, and in vacation time the streets are deserted and silent.

Lombardy passes across the Ticino and the Po in two places, namely, at the south near Padua, where a narrow strip of land between Piedmont and Liguria goes up to the ridge of the Apennines, and, secondly, in the district called the Lomellina, in the bend of the Po between Pavia and the mountains of Montferrat. The Lomellina is a well watered section of the plain of the Po, made up of meadows and rice fields, having as centre the railway junction of Mortara. Corn growing and cattle raising flourish, especially the latter, as the meadows may be mown as often as nine times a year, and yield abundant fodder.

## 2. PIEDMONT.

Setting aside the Lomellina, the Ticino separates Lombardy from the Piedmont country, which adjoins it on the west, and it was for a long time the boundary between Sardinian and Austrian territory. This western, like the middle section of the plain, is well watered by the Alpine streams. It is traversed by many irrigation canals, and has a dense network of roads, railways and tramways. The ground, of course, lies higher, rising to 1,500 feet at Cuneo, in the corner between the Alps and the Apennines. In the middle of Piedmont rises straight out of the plain the mountainous district of Montferrat, once an independent State under a race of Marquises. The Po makes a circuit round this obstacle on the north, and its tributaries, the Stura and the Tanaro, on the south, dividing it from the Ligurian Apennines.

North of this, and partly in the plain partly in the Alps, lies the Province of Novara, with its numerous spinning and weaving mills, and the towns Vercelli and Novara. The latter, formerly a frontier fortress, stands on blood-stained soil. Here, in 1849, Charles Albert

lost a decisive battle against Radetzky, and had to abdicate, and not far off in Lombardy, on the other side of the Ticino, MacMahon attacked the van of the Austrians in 1859 and forced them to evacuate the district west of the Mincio. At the edge of the Alps is the little town of Biella, rendered famous by Quintino Sella. It has large cotton mills, and in the neighbourhood there are iron mines. A ship canal (Canale Cavour) runs in the plain between Biella and Vercelli, from Chivasso on the Po to Galliate on the Ticino.

The Dora Baltea is indisputably a line of geographical importance. This river, carrying a mass of water equal to that of the Ticino, does not deposit its *débris* in a lake, but spreads over the plain at flood time with all its water and shingle, flooding it and forming swamps. Pursuing the course of the Dora Baltea up the stream we come across a hilly moraine country intruding far into the plain. Its walls of *débris* skirt the plain where it broadens out by Ivrea, and prevent the water from flowing off. The Serra, on the north-eastern side of the basin of Ivrea, forms a moraine of a size unequalled in Europe, a straight ridge ten miles in length and steep on both sides. Ivrea itself marks the southern end of one of the most important international routes, leading to the passes of the Great and Little St. Bernard. The valley contracts a little above the town, and is commanded by Fort Bard, and the road to Chatillon passes through the narrow ravine of Montjovet, and rises above the roaring Dora and its ironworks, where the valley turns through a right angle.

In the upper section of the valley before reaching the passes lies Aosta, the terminus of a railway, at a height of 1,900 feet. This town, with between seven and eight thousand inhabitants, and enjoying a glorious situation, was an ancient Roman settlement, and has still the rectangular city walls with towers, the remains of a theatre, an amphitheatre, and a bridge, and above all a well-preserved triumphal arch of Augustus. The language of the people in the Baltea valley is a French dialect which reaches over the mountains from La Haute Savoie, as before 1860 both slopes belonged to the King of Sardinia. Some mines of iron glance and pyrites are scattered through the valley, and the water power is extensively used for smelting and forging iron. Higher up, where the southern vegetation ceases, the mountain pastures are profitably utilized, just as they are in Switzerland, where they reach up to the glacier ice.

From Ivrea the plain between the Alps and Montferrat narrows more and more, so that the Orco and Stura, flowing down from the Gran Paradiso, have but a short course. At the narrowest part before the flatter land tends southwards and opens out again, the Romans founded at the confluence of the Po and the Dora Riparia,

their Augusta Taurinorum, now called Torino (Turin). Scarcely anything is left of the ancient buildings, but the city, in spite of many rebuildings, has preserved the rectangular laying out of its streets. It has a thoroughly modern character, with its broad clean streets, its large palace uniform in style, together with a certain sobriety which corresponds to the character of the Piedmontese, and the impression it makes is rather that of a French than of an Italian city. The hilly country on the other side of it is beautiful, and the Basilica di Superga, on a commanding height (2,200 feet), with the mausoleum of the Kings of the House of Savoy, is visible from a long distance. Turin was long the residence of the Dukes of Piedmont, who became



VIEW ON THE PO BELOW TURIN.

With the Upland of the Monteferrato in the background, the Church of Gran Madre di Dio on the left, and the Capucine Monastery on a hill to the right.

Kings of Sardinia in the 18th century, and was, before 1860, the centre of the struggles for liberty represented by Ricasoli, Cavour and Victor Emmanuel. The monument to Cavour by Dupré, the Palazzo Carignano, the meeting place of the first Italian Parliament, and numerous memorials of Victor Emmanuel, remind us of that time of glory and enthusiasm.

Turin has a university, an academy of painting, and an Academy of Sciences of high repute. It contains the headquarters of the First Army Corps, and its industries have so developed during the last ten years that its inhabitants now number 329,000. Its flourishing trade and traffic soon recovered from the loss caused by the transference of the seat of Government to Florence. In Turin the railway

from France through the Mount Cenis tunnel and along the Dora Riparia valley enters the network of Italian lines, and the monument erected on the Piazza della Costituzione in memory of this first railway through the Alps is in its right place.

We find an ancient international road along the Dora Riparia as there was in the valley of Aosta, and consequently many Roman remains. At Susa, the Roman Segusio, we find another triumphal arch raised in honour of Augustus as the conqueror of the Alpine nations, a proof how difficult the securing of the passes and the subjugation of the mountain tribes must have been. Above Susa several of the heights near the village of Exilla are crowned with forts, covering the railway and protecting Turin from surprise.

The population here and in the neighbouring valleys of the Chisone and Pellice speak an idiom allied to the Provençale, and they belong partly to the Waldenses, whose villages lie in the Alpine valleys between the Dora Riparia and the Po.

The plain between Turin and Cuneo was somewhat neglected till the construction of the railways to Savona on the coast, and to Alessandria, along the Tanaro. Since then the towns of Pinerolo, Saluzzo, Cuneo, Mondovi have all become small centres of manufacture, but with no specially pronounced character. From Cuneo two roads lead over the mountains, one westwards into the valley of Ubaye, the second southwards over the Col di Tenda to the sea, forking inland at the pass, one route descending in Italian territory by many windings to Ventimiglia, the other in French territory, ending after some circuits at Nice. All these roads are rendered impassable in war time by many fortresses, and garrisons to protect the passes are placed in all the towns from Turin to the Gulf of Genoa. These consist of Chasseurs, mountain artillery, and infantry, and correspond to the disposition of French troops on the western side of the range. The valleys of the Maritime and Cottian Alps contain mines of graphite and iron, as well as various useful building stones.

The hills between the Po and the Tanaro are the best cultivated part of the country. The gentle slopes are thickly planted with fruit trees, chestnuts, hazels, mulberries, and above all, vines. Hence come the red Barolo wine and the red or white sparkling wine, Asti spumante, named after the little town of Asti on the south side of the region. The numerous small towns, villages, and homesteads lying in the midst of carefully tended lands show that the soil is very fertile, and this holds especially of the gentle slope to the south, while the hills to the Po are somewhat steeper, and present fewer suitable places for building villages. Casale, the ancient capital of the Marquisate of Montferrat, is the only town to be named on the Po.

It forms an important crossing place and junction, and is consequently fortified. On the slope towards the Tanaro lie Chieri, Asti, Bra and Alessandria. Bra is remarkable for the cultivation of wine and silk, Asti supplies the sparkling wine mentioned above and was also the birthplace of the poet Alfieri (1749-1803), while Saluzzo, at the foot of the Alps, was the home of Silvio Pellico. Alessandria is at the confluence of the Tanaro with the Bormida and the Orba, which flow northwards from the Ligurian Apennines. It was founded by Milan in these marshy lands as a fortress against Frederick Barbarossa in 1168. Owing to its position, it is still of great importance as a military centre and a magazine of ammunition and stores. It is strongly fortified.

Lastly, the north side of the Maritime Alps and of the Ligurian chains belong to Piedmont. In these, south of Alessandria, there is an easy passage to Genoa, but the only important route is that by way of Novi. The character of the landscape is determined by the nature of the soil, for the clays and marls offer little resistance to the atmosphere, sliding down and making flat slopes, which only have a steeper character here and there where a bank of sandstone occurs. The valleys are marshy and stony in the lower portions, and often deeply cleft in higher sections. The barren soil near the summits is only fit for wood and pasture, as cornfields and vineyards would suffer from drought or from the violent storms of rain. The country is consequently somewhat less thickly peopled than the regions we have been speaking of, and, as a matter of course, the villages lie along the two streams which supply the Bormida and the upper affluents of the Tanaro. Any one who travels over the mountains to Genoa will see from this configuration that the spurs of the mountains near the latter place are pleasantly set with homesteads or chapels. In conclusion, it is worth while to mention the strong sulphur springs at Acqui, of a temperature of 140° F., which are perhaps connected in their origin with the neighbouring eruptive rocks.

### 3. VENETIA.

To the east Lombardy leads to the district of Venetia, which extends from the Po northward to the Adriatic and along this as far as the summit of the Carnic Alps and to the frontier of Austria at the Isonzo. In the south is a well-watered plain traversed by the Adige and the arms of the Po, becoming quite flat in the delta of the Po, where it scarcely rises above the level of the sea. Numbers of canals facilitate the drainage of the water, which would otherwise make the soil marshy, at flood time would overflow the land far and wide, and, bursting dams and dykes, strike out a new way for itself with irresistible

violence. In spite of this, wide stretches are undrained and are used as ricefields or meadows. In spring and summer these fever-haunted strips of land shut between the Adige and the Po are like a limitless green meadow through which creep the numberless sluggish watercourses. It is only here and there that a gentle rising and dry ground make their appearance in ancient dune-walls. The rivers held in by dams flow to a great degree above the level of the surrounding country. Thus the towns of Rovigo, Adria and Cavarzere lie below the level of the Po. The delta proper, with its lands marshy from the inundations, has no settlements of any size, only farms and cottages, and is used as meadow land (cf. map, p. 91).

A range of hills composed of basaltic rocks and early Tertiary strata juts forward south-east from the mountains into the plain between Verona and Vicenza, accompanied on its western side by the Adige. There the estuaries and arms of this river pushing forward have created a piece of alluvial land of which the corners are marked by Ferrara, Verona and Mantua, and in which the Tartaro creeps slowly down to the sea. In the direction of the Vicentine heights stand the isolated hills of the Monti Euganei and Berici, which force the streams from the Alps to bend eastwards. North-east of this undulation the land divides into three sections. On the coast is a low stretch of country gently sloping to the sea, bounded by lagunes and sand-hills, farther up a piece of very fertile level ground subject to threats of inundation from the floods of the Alpine streams; finally, Alpine country, with the spurs of the mountains clothed with vines, fruit trees and chestnuts, and the thickly populated valley gorges reach far into the range.

The population is by no means homogeneous. In the hills near Vicenza we have the German settlement of the Tredici and the Sette Comuni; in the eastern part of Venetia, in Friuli, dwell many Slavs, and the Croatian population oversteps the frontier in many places. The Venetians themselves have a mixture of foreign blood through the Illyrians once settled on the coast and long dreaded as pirates.

Where the Adige reaches Italian territory on leaving the Trentino, the gorge of Verona opposes its limestone cliffs as an obstacle to its course. The river breaks past on one side through the mighty moraine of the Adige glacier, which once ended at that place, and it has had to gnaw out for itself an aperture in the rocks which now affords a passage for the railway and road. This pass, already celebrated as an important point in the Middle Ages, is now surrounded by fortresses on all sides. A few miles higher up, close to the frontier, at Mori, a tremendous landslide took place in 883 A.D., the débris of which

cuts through the way and has been partly cut through, partly gone round, by the river, which had been temporarily converted into a lake. Dante has alluded to this catastrophe in the twelfth canto of the *Inferno*.

The place, where to descend the precipice  
We came, was rough as Alp, and on its verge  
Such object lay as every eye would shun.  
As is that ruin which Adige's stream  
On this side Trento struck, should'ring the wave  
Or loosed by earthquake or by lack of prop ;  
For from the mountain's summit whence it moved  
To the low level, so the headlong rock  
Is shivered that some passage it might give  
To him who from above would pass ; e'en such  
Into the chasm was that descent.

CARY'S *Dante*.

The most important city of the edge of the mountain range is Verona, a fortress of the first rank, with far spreading outworks. The town was established as a colony in the Roman period, and the amphitheatre, built about 90 B.C., is in good preservation. At a later period Verona was the residence of Theodoric the Great, and after the Interregnum it was an independent sovereignty of the Scaliger family, till it fell into the power first of Milan and then of Venice. The town stands on a peninsula partly surrounded by the Adige, and there are several bridges over the river from the town, which is on the right bank. One of these is the scene of the event sung by Bürger in his Lay of the Brave Man. Dante during his banishment found a place of refuge in this town, with the ruling prince, Can Grande, and as Shakespeare placed the scene of *Romeo and Juliet* in Verona, this city has relations with the poetry of several nations.

A most singular impression is made by the *Piazza delle Erbe*, where the fruit and vegetable women sit under gigantic umbrellas, and which is always densely crowded owing to the narrowness of the space. The monuments of the Scaliger family are famous ; they stand close by the *Piazza dei Signori*, and are in perfect Gothic style, being among the best of the monuments of that time that have been preserved. Among the numerous churches we must mention *Zeno Maggiore*, which is considered the finest Norman building in Northern Italy. Besides this, the city possesses several Gothic and Renaissance palaces, a sign that wealth and artistic feeling flourished till the end of the seventeenth century. The best view of the city, with the river flowing through it, the fortifications, the suburbs, and the flourishing country around, is to be had from the garden in the Villa Giusti,

where the mighty cypresses first acquaint the Northerner with the dark gloom of these trees.

East of Verona come the Vicentine hills, abounding in wine and fruit, with the *Tredici Comuni* on the slope of the Monti Lessini above Tregnano. From these heights the streams radiate towards the south, some of them uniting to form the Bacchiglione on which stands Vicenza, a small town abounding in artistically built palaces. Up the valley we reach Schio, with the great cotton mills of Commendatore Rossi, who has built a small town for his workmen, and also the much visited watering place, Recoaro, whose chalybeate springs form a summer rendezvous for the fashionable world of Northern Italy. Still farther in the range of mountains, at the foot of the Cima Dodici, is a second German colony, the *Sette Comuni*, whose lands reach to the frontier of the Tyrol.

South of Vicenza are the green and thickly planted hills of Monte Berici and Colli Euganei, the valleys of which have been health resorts owing to their warm baths, salt baths and iodine baths, since the time of the Romans. The highest point, the Monte Venda, serves as weather glass to the plain. On its eastern side, along the railway from Padua to Bologna, lie the baths of Battaglia and Monselice; on the southern slope is Arquà del Monte, the dwelling place of Petrarch; and somewhat further out in the plain is Este, the original seat of the family of Princes and Dukes of that name.

Following Vicenza comes the manufacturing town of Bassano, on the edge of the range at the entrance to the valley of the Brenta. This valley commences in the neighbourhood of Trient; it is called Val Sugana in its upper section, and lower down it is one of the most fertile districts in Italy. At Carpané, above Bassano, there is extensive cultivation of tobacco. This region, like the valley of the Piave, is interesting geologically on account of its eruptive valleys and the disturbance of the river course connected with them.

The valley of the Piave stretches far up into the Alps, where the chain turns northwards and contains the Dolomites of Southern Tyrol. Belluno, a town often devastated by earthquakes, is its trading centre. From the main valley branches off towards the north the Val' Agordo, the mineral wealth of which has given rise to active mining operations and to the foundation of a school of mines in the town of Agordo. The Piave leads us past Pieve di Cadore, the birth-place of Titian the painter, up to the Sextine Pass and the Drave.

The most easterly section of Venetia is Friuli, watered by the Tagliamento, where there is an admixture of Slav blood in the population. In the upper part of the course of the river, between the two mountain chains, there are rich lands producing hay, corn, wine and

olives. The towns of Ampezzo and Tolmezzo are used by the Alpine climbers as points of departure for excursions to the Southern Tyrol and mountains of Carinthia. The railway from Venice to Vienna, past Pontebba, runs along the Fella, a tributary of the Tagliamento. The Tagliamento in its lower course, where it reaches the plain, has made for itself a vast elevated bed of débris, of great breadth, flowing in the space between mountains and sea some twenty-five to thirty feet above the level of the surrounding country, and causing disastrous floods when it breaks its banks. The chief town of Friuli is Udine, a medieval city still surrounded by a double wall and ditch, which is often compared to Venice on account of its canals and water channels.

But with Udine we have already arrived at the plain which is traversed by the lower portions of the rivers we have named. It is a rich though often swampy district of meadows and arable land, and contains but few large towns. Besides Udine we may mention Treviso and Padua (*Padova*), both provincial capitals, but only the latter having any great importance on account of its university. This was for many centuries the chief school of jurisprudence, and was attended by thousands of foreign students, as is evidenced by numerous coats of arms on the University buildings. St. Antony of Padua died there in 1231; he was a contemporary of St. Francis of Assisi, and protector of the brotherhood named after him. A vast cathedral is dedicated to St. Antony somewhat at the outside of the city, the oldest quarters of which go back to the time of the Romans, perhaps even to the fabulous time before them. At the end of the Middle Ages, Padua became subject to Venice, who held the sovereignty till the loss of her independence. The streets are narrow and the houses have halls supported by columns, just as we shall find it to be in Bologna. In spite of its 50,000 inhabitants, the circumvallation of the former fortifications includes large open spaces, now laid out in gardens,

On the edge of the sea, built upon islands or dunes, or even directly upon piles, and only connected with the mainland by a long railway embankment, stands the unique city of Venice, hardly above the level of the lagoon. The inhabitants of Aquileia on the north-east corner of the Adriatic, being driven out by the Huns, built a new home under the shelter of the Lido, not to be reached by any enemy who could not traverse the sea. Venice rose rapidly to prosperity through the ability of its inhabitants, so that as early as the ninth and tenth centuries it vied with the other maritime cities and looked upon the Adriatic as its own sphere of influence. After 1200 it ruled the whole of the Christian East, and carried on a vigorous contest with Genoa, its rival in the Levant. At a later period Ottoman Turks found in



VENICE.



the Venetians their toughest and most courageous antagonists until internal dissensions, an aristocratic government harsh even to cruelty, and the destruction of their command over the commerce of the world,<sup>1</sup> brought about the ruin of the city and of the State.

The extent and importance of her trade with the North has been spoken of earlier. Every stone in the Venice of to-day speaks of her great past, and the palaces, the monuments, and the churches testify to her wealth as well as to that peculiar combination of Eastern and Western life which could only exist at the point of contact of two worlds.



THE LAGOONS OF VENICE.

Venice is at present a city of 159,000 inhabitants. It is the seat of a prefecture and an Academy of Art, and it has extensive shipbuilding works and arsenals belonging to the Royal Navy. The trade, which was at the lowest ebb at the beginning of the nineteenth century, has been gradually rising, and exceeds that of the other Italian ports on the Adriatic, but this trade only uses Venice as a place of transshipment, and brings little prosperity to the city.

The lagoons are separated from the sea by narrow dunes, or sand-banks, twenty miles long (*lidi*), with three openings, Porto di Lido, Porto di Malamocco, and Porta di Chioggia, the last being named

<sup>1</sup> Due to the discovery of the Cape route to India. Trans.

after an adjacent town. In order to prevent the sand from being washed away, the Lido has been strengthened with sea walls near Chioggia, and to guard against surprise redoubts and forts have been erected, making entrance difficult. There is also a circle of fortifications of this kind built round the city, upon piles driven into the water, which it must have required long practice in hydraulic engineering to construct.

The city is made up of 117 inhabited islands separated by a network of 180 canals and cut through by the Canale Grande, bent into the shape of an S. All traffic is carried on in gondolas; there are hardly any streets through which it would be possible to drive, and thus there is an entire absence of bustle and dust. Its position in the water gives Venice a mild and warm climate, but in summer this brings with it the annoyance of the zanzare (mosquitoes). The streets are short and narrow and there are numerous bridges from one island to another. The main bridge is the Rialto, over the Canale Grande, which used to be the only terrestrial connexion between the two parts of the city, and was thus the centre of the densest traffic.

Whoever comes for the first time to Venice immediately visits the Cathedral and the Piazza of St. Mark. It is there that the historical associations are mightiest, with the vast building of the Doge's palace, the Cathedral of St. Mark and its cupolas, its lavish splendour without and its singular mosaics within, and the solitary bell tower<sup>1</sup> with the winged lions on the columns, the symbol of the republic. It was from the Doge's palace that the State was ruled, and behind the building united to it by the Bridge of Sighs over a narrow canal, is the ancient prison with its torture room and its horrible dungeons. In these vaults the State Inquisitors stifled all aspirations for independence on the part of the nobles or the citizens. In the Palace of the Doges the history of the city is represented in numerous paintings by artists of Venice or Northern Italy.

A ride in a gondola from the Piazza through the Grand Canal gives some idea of the wealth of the old families. The palaces of the nobles rise above the water on both sides, at present it is true to some extent in ruins and blackened with the damp. The pointed arch of Italian Gothic alternates with the elegant ornaments of the different Renaissance periods according to the century, from the fourteenth to seventeenth, to which the architecture belongs. The Palazzo Vendramin, Palazzo Pesaro, Palazzo Grimani and Palazzo Corner della Cà Grande must be mentioned. The collection of pictures belonging to the *Accademia delle belle Arti*, one of the finest galleries in Europe, is especially rich in works of Titian, Paolo Veronese, Tintoretto and Bellini. Every-

<sup>1</sup> Now in ruins. (Trans.)

day life displays itself on the Piazza San Marco, where there is always a crowd in summer to listen to the band. In the day the Piazza is thronged with countless pigeons which build on St. Mark's Church. As the symbol of the Holy Ghost they were protected by the Orthodox Church and have so increased that a regular endowment had to be provided to feed them. The quay of the Riva degli Schiavoni, the only broad street of the city, serves as a promenade. The shabby brilliancy of a bygone time, silence and damp are the characteristic traits of Venice.

In the lagoon north of the city lies the Island of Tombs, and somewhat further the town of Murano with glass and mosaic factories. Then the islands get more numerous, and closing up together the lagoons become mere canals as we reach the meadows and marshes of the northern coast of the Adriatic. The mainland just opposite to



VENETIAN GONDOLA.

Venice is also traversed by water channels and ditches, and its character is often compared with that of Holland. The summer residences of the Venetian families lie beside the lower part of the river Brenta, like the country seats of the merchants of Amsterdam.

The rest of the coast as far as the Austrian frontier consists of the alluvium brought down by the Piave, Tagliamento, and Isonzo; it is marshy and barren, there is no large town and no harbour to be found there, and even Aquileia, on the other side of the frontier, is now pushed far into the interior of the country and is a dead city, in spite of the new settlement made there during the Middle Ages.

#### 4. LIGURIA

It is scarcely possible to conceive a greater contrast than that between the coasts of the northern end of the Adriatic and those

of the Tyrrhenian Sea. In Venetia the land is moist, flat and green, sloping slowly to the sea, while in Liguria the coast is steep, without any strand, quickly falling away to the deep sea, while abrupt walls of rock jut out into numerous promontories and scarcely leave room for roads and railways.

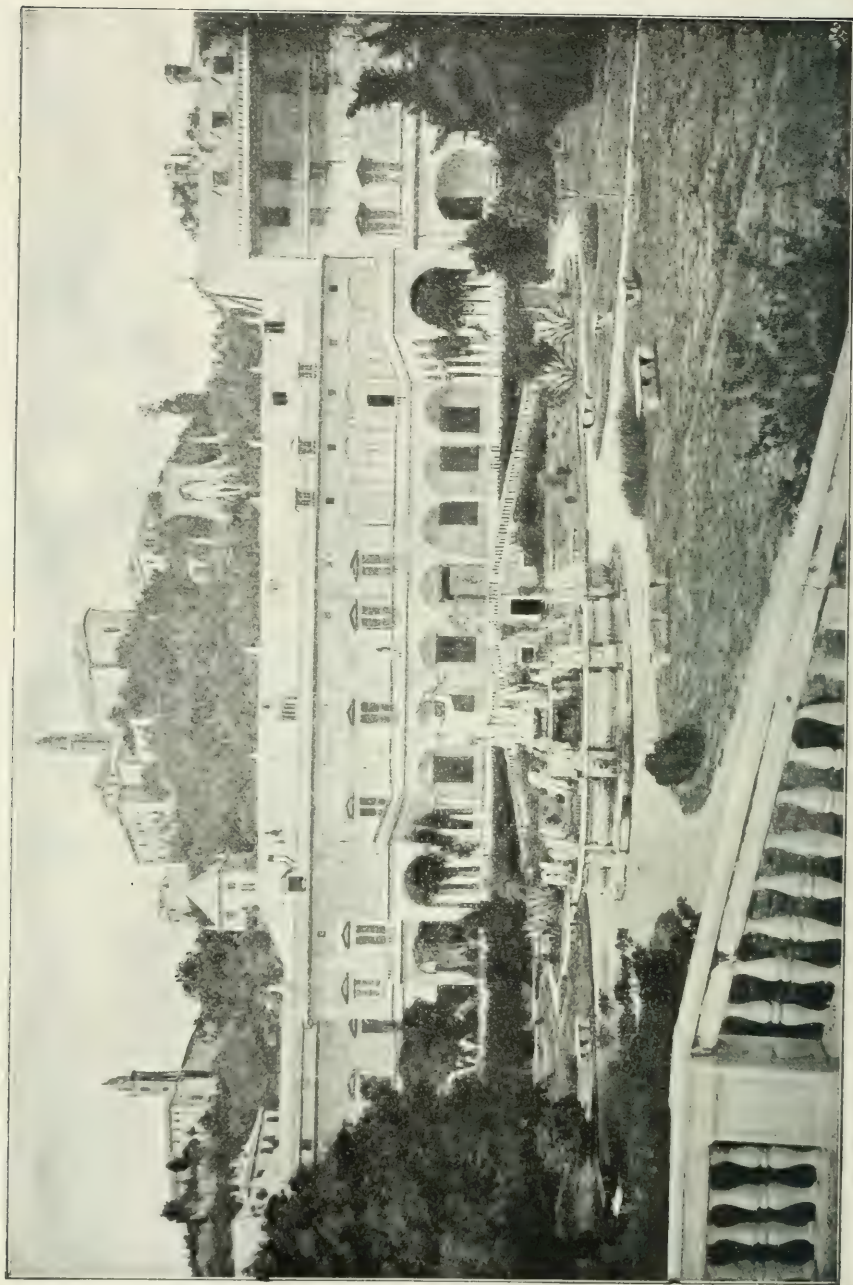
The country designated as Liguria is the narrow strip of land between the Tyrrhenian Sea, the ridge of the Maritime Alps, and the Apennines as far as Spezia. It is in the shape of a bow, and the inner portions of the arc are known as Riviera di Ponente in the west and Riviera di Levante in the east. Being protected from the north wind, and its valleys all opening towards the south, it has almost the climate of Central and Southern Italy, moderated by the sea and by its northerly situation. As a consequence, plants such as palms flourish in the open air even in winter, and small towns formerly of no importance have become famous as winter and health resorts. The margin of the coast is densely peopled by vigorous fishermen and cultivators of terrace gardens. The foreigners have essentially contributed to the prosperity of the district, but the number of consumptive patients has unfortunately spread this disease, so that loud complaints have been repeatedly made of late about the increase of tuberculosis. Most of the towns and villages stand picturesquely on the promontories or on the slopes of the mountains with views over the sea, and on lands which are carefully cultivated, every corner being utilized. The railway from France to Genoa, which is continued to Tuscany, runs along the shore through a series of tunnels; it is one of the most important arteries of trade, and its construction met with great difficulties at the time and cost an enormous sum of money.

If the connexion between the shape of the coast and the mountain tillage is only indistinctly apparent in the Riviera di Ponente, it is distinct enough on the other side at Rapallo and Spezia, where the chains stretching along the shore jut farther out into the sea and make safer anchorages. The most southerly of these, covered by the peninsula of Portovenere, forms the naval harbour of Spezia.

In a district that was formerly Italian, but which has belonged to France since 1860, stands Nizza (Nice), a city Italian in population and now one of the most important of health resorts, with foreign visitors by the thousand. Forts all around command the valleys which lead down to it from the Maritime Alps, and the road to Cuneo in Upper Piedmont. Close to the frontier stands Mentone, and between the two towns, beautifully situated on a projecting cliff, is Monaco, the capital of the small principality under French protection, containing Monte Carlo, the notorious international gambling house.

The frontier station of Italy is Ventimiglia; it is at the entrance





PALAZZO DORIA IN GENOVA.

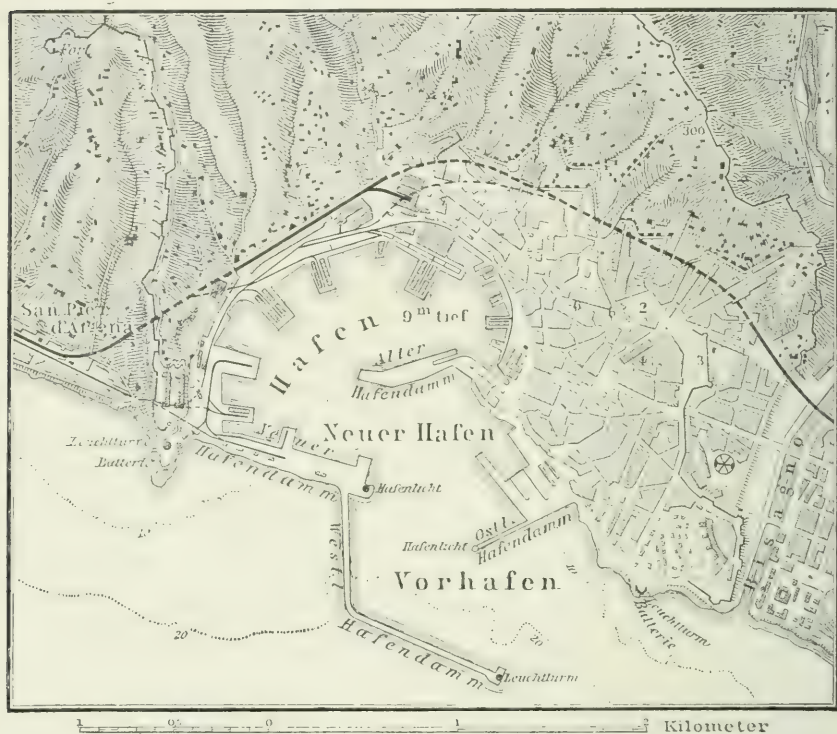
to the valley of the Roja, which comes down from the snow-clad Col di Tenda. A little farther east are Bordighera and San Remo, with olive groves and palms in the lower ground and fine woods on the higher part of the mountain.

The days in winter are warm and calm, there are no cold north winds, and the air is strongly charged with moisture. These qualities have made of both towns health resorts for diseases of the chest and have caused numerous hotels to be established in them. The rich flora blooming early and the palms, give rise to a brisk export trade in palm and cycas fronds and of flowers of all kinds. Unfortunately the Ligurian coast is visited from time to time by earthquakes, which threaten the often very badly built towns on the cliffs. Thus the shock of February 24, 1887, did much damage to property and life, and brought temporary suffering in its train, by causing strangers to keep away. It is worthy of remark that the mountain glens are prolonged on the steeply descending sea bottom, which points to a sinking of the coast and perhaps explains the earthquakes.

Olive groves and thickets of oleander surround the small picturesquely situated Porto Maurizio, orange groves are found at Alassio and Albenga, and the railway passes among heights crowned with ruins before reaching Savona, the only town of importance in the Riviera di Ponente. Thence a road and a railway run over the Apennines to Piedmont, sending off branches at the top of the pass to the Bormida and Tanaro valleys. Farther along the coast Monte Beigna juts out with precipitous descent to the sea, till at Voltri we reach the centre of the arc of the Gulf of Genoa. Close beside are Sestri and Pegli, the last remarkable for its South Italian vegetation, which attains a wonderful development in the renowned Villa Pallavicini.

The chief town of Liguria, however, is Genoa (210,000 inhabitants in 1891), the largest trading city of Italy, once a republic ruling the sea and a powerful rival of Venice. Genoa is situated at the most convenient point for crossing over the mountains by way of the Polcevera and Scrivia valleys, and it possesses a deep bay easily converted into an excellent harbour by moles. These two circumstances, together with its position near the vertex of the gulf, are the causes of its development as a trading city. Between the mountain torrents of the Polcevera and the Bisagno rise the mass of houses in an amphitheatre; surmounted on all sides by the fortifications of the commanding heights and surrounded by mansions, villas and groups of scattered houses. The quarter by the harbour is low and unhealthy, besides being noisy, dusty, and dirty with coal dust. Want of space makes itself felt to such a degree that the ingress and egress of trains at the

station can only be accomplished by the most complicated manœuvres in shunting backwards and forwards. Broad moles project east and west into the sea and keep back the waves, while shorter quays running out radially from the shore form landing places for the ships. Most of these, however, ride freely at anchor in the harbour. As in Hamburg or Bremen, a many-coloured scene of animation unfolds itself on



PLAN OF GENOA.

N.B.—Vorhafen = Outer Harbour  
 Neuer Hafen = New Harbour  
 Hafen 9<sup>m</sup> tief = Inner Harbour  
 30 ft. deep  
 Leuchtturm = Lighthouse

- (1) Palazzo Doria
- (2) Villetta di Negro
- (3) Giardino Acquasola
- (4) Galleria Mazzini
- (5) Via della Circonvallazione
- (6) Via Valdi
- (7) Via Valdi

Alter, Ostl, Westl Hafendamm =  
 Old, Eastern, Western Pier

the landing stages before the sailing of an emigrant ship, and this has been described in words by C. de Amicis and in pictures by several modern Italian painters (e.g. August Tommasi) in a striking and realistic manner.

The city proper, Genova la Superba, has steep narrow streets with lofty houses that admit scarcely any light into the lanes. Numerous flights of steps facilitate the ascent of the streets, and increase the

confusion in the passages. We are reminded of the ancient greatness of the city by the proud palaces with their wide courtyards which are pleasant, quiet, sunny, open spaces surrounded by columned halls, flights of steps, and many ornaments, in the midst of the bustling tumult of the dark narrow streets. Near the railway lies the palace of Andreas Doria, farther up the Via Garibaldi (Via Nuova) there is a series of these, one after the other, up to the green grounds of the Villetta di Negro, and the Giardino d'Aquasola. The most glorious view over the city, the harbour, the lighthouse, etc., is obtained from the carriage road round the fortifications along the hill side, a favourite walk in the evenings when the sun is setting behind the snowclad tops of the western Alps. The factories have been established on the two sides where there is more room, and with their workshops and workmen's dwellings reach from Pierdarena some miles up the valley of the Polcevera.

Next to Genoa on the Riviera di Levante comes Nervi, a health resort situated on a steep slope in the midst of a rich vegetation, and then Rapallo, with its picturesque promontory and well-defended bay. The lower part of the hills is cultivated on terraces looking like gardens, and there are forests of foliage trees, such as chestnuts, higher up. Above them the wood has been cleared and the mountains are bare and full of the most sterile debris, often inaccessibly steep, forlorn and barren. Chiavari, Lestri Levante, and Lavagna are small fishing villages with anchorages but little protected, which are exposed to westerly winds and to the high waves of the open sea as they dash up against the cliffs.

The strips of coast get narrower and narrower as we go south, so that before reaching Spezia the tunnels with which the railway pierces the end of the chain are longer (see map, p. 260). We have mentioned more than once that this point has been, since 1853, the most important arsenal of the Italian navy. The deep bay is guarded by strong fortresses erected all round it. In the back ground, on the flatter shore, lie the wharves, docks and basins, while the artillery magazine is in a well protected bay. The shipbuilding yards, foundries and the like, are also along the sea on the side opposite to Lerici, and the bay is generally lively with several ships of war engaged in manœuvres.

The longitudinal valley of the Varo ends at Spezia. Its tributary the Magra, which falls into it after breaking through the parallel chain of Carrara, enables the new railway over the Apennines to Pontremoli to climb the summit of the range, crossing by the pass of Parma. Pontremoli lies in an elevated valley, fertile itself but shut in by heights which are not very productive and are dried up in summer. Geographically it belongs to Tuscany as does Carrara with its famous

marble quarries. As the numerous quarries are some five miles from the sea a railway has been built to facilitate the traffic, especially the transport of the hewn blocks to the sea and the landing stages. The best kinds come from above Carrara, but marbles are quarried all along the stretch of land from this little town to past Massa as far as Serravezza, some ten miles up (see p. 179). In Carrara itself there are many statuary works, polishing works, and other establishments of a like nature, and besides these there is a school of art and a museum for the productions of artists educated there. The population is looked upon as somewhat troublesome owing to the number of quarrymen ; they are disposed to deeds of violence and resistance to authority, being to a great extent republicans, social democrats, or anarchists, all



PRECIPITOUS COAST OF LIGURIA, WITH PORTOVENERE AT THE ENTRANCE OF THE BAY OF SPEZIA.

the more that the work is heavy and the pay as a rule inadequate. The geological connexion of these mountains with Tuscany is also expressed in the wealth of metals, to which several mines of copper, lead, silver and mercury, owe their existence. The region of Carrara forms a special province, *Massa e Carrara*, but in popular speech it is generally called *Lunigiana*, after the town of Luna.

## 5. THE EMILIA

The former duchies of Parma and Modena as well as the Romagna, which belonged to the States of the Church, are united, in the new kingdom of Italy, under the name of Emilia. These districts, after throwing off the foreign rule for themselves in 1860, declared their

annexation to Sardinia by a popular vote. The Emilia embraces the land between the ridge of the Apennines, the Adriatic, and the Po as far as Piacenza, and is separated from Piedmont by a narrow strip belonging to Lombardy, with Voghera as its chief town. Here, as in the districts north of the Po, lands of very different character are united together, mountains with barren tops and cultivated offshoots, wide plains with cornfields, many trees and numerous single homesteads, stretches of marshy land exposed to floods like the lands by the Adriatic, devoted to the cultivation of rice and to fishing (as for instance the surroundings of Ferrara and the Valle di Comacchio), and lastly sandy wooded strips along the seashore of Ravenna and Rimini. The inhabitants are chiefly employed in agriculture, there being manufactures only in a few cities, such as Parma, Piacenza and Modena; of these hats made of felt, straw or bast, pottery and tiles are the best known.

The Emilia in pre-Roman times was first under Etruscan and then under Celtic rule, on account of which it was for a long time called Cispadane Gaul. Many remains, especially tombs, are of this first period. The time of the later Roman Emperors and the subsequent Gothic epoch bestowed on it for a time a higher importance owing to the transference of the seat of Government to Ravenna. Since the Lombard conquest the different sections have often changed masters, the Romagna, the eastern part, the pretended gift of Pepin to the Pope, after many vicissitudes and attacks by foreigners, alone remained to the Papal See till 1860. This was the coast land from the Po to Ancona, also called the Exarchate, and was governed by Cardinal Legates with unlimited power.

There is nothing specially to be said about the plain of the Po. Piacenza, the seat of a prefecture, has been fortified as being a strategic point for passing the river; the foundation of the city is of old date, as it was planted by the Romans as a military colony (Placentia) against the Gauls. Guastalla is another crossing point; it was formerly the capital of a municipality of the same name, held by the Gonzaga family of Mantua. Farther up the Po is Ferrara, which lies among rice-fields and swamps below the level of the river. It is a town of little animation and its circuit has become far too large for its present population. At one time the Dukes of Este held their court there and decorated the town with beautiful buildings. The poets Ariosto, Torquato Tasso and Guarina enjoyed protection and advancement from these princes till the House died out and the Pope seized the fief.

Between Ferrara and the sea lies the wide lagoon of the Valle di Comacchio, shut in by two branches of the Po. This is a shallow arm

of the sea, blocked by sands from the Po, and degenerating on all sides into marshes and sandbanks, but of importance for the fisheries as the fish spawn there, and it is thus a good place for catching them. At an earlier period the rivers from the Apennines, from the Reno to the Santerno, used to flow into this basin. This for a long time reduced its size till the water was collected in canals and ditches and led along its southern edge direct to the sea. The same cause led to the choking up of the canal constructed by Augustus from the Po to Ravenna. The river sediment has fundamentally altered the shape and extent of the land since the birth of Christ. After the erection of buildings by Augustus at Ravenna that city became a harbour for warships and a station for the fleet, but two or three centuries later it became useless for this purpose owing to its being choked with sand. The city owed its period of prosperity to the Emperor Honorius and the kings of the Ostrogoths, who made it their place of residence and erected splendid buildings, which are still to some extent preserved. The church of San Vitale, for instance, which served as a pattern for the Cathedral of Aachen, dates from the sixth century. In the same way Sta. Maria in Cosmedin and the ancient basilicas of St. Apollinare Nuovo and St. Apollinare in Classe are remains of the architectural activity of the ancient Goths. The mosaics, too, which are used to the same extent only in Venice and Palermo, seem to be characteristic of that epoch. Of monuments there are the little fifth century church of St. Nazario e Celso, ornamented with mosaics, and the mausoleum of Theodoric the Great before the gate, remarkable for its dome made out of a single gigantic block of stone. Owing to these edifices Ravenna is one of the few places where it is possible to study numerous and well preserved monuments of early Christian art. The neighbourhood is unhealthy from the floods and the height of the underground water, and the glorious pine forest on the dunes on the seashore, sung by Dante and many poets since, has unfortunately suffered greatly from conflagrations. It formerly reached almost without interruption from Ravenna to the Savio.

The Uso, the Rubicon of the Romans and once the frontier river between Gaul and Italy, enters the sea south of Ravenna. Rimini, whose harbour has also been choked with sand, stands just where the Apennines come to the sea. A ship canal for small sailing craft and fishing boats connects the town with the sea and is used in exchanging goods, and especially for the importation of fish, which is supplied to the mountain districts for fast days. But with this town we are already at the foot of the mountains, in the second zone of the Emilia.

In the time of the Romans the Via Emilia ran in almost a straight line along the edge of the range of mountains from Ariminum to

Placentia. It was one of the main roads of Northern Italy and from it the region takes its name. At the present time the railway through Parma, Modena, Bologna, Faenza, Forli and Cesena, straight as if drawn with a ruler, preserves almost exactly the direction of the Roman road. Although the lower lands are threatened in spring and autumn by the inundations and landslips caused by the rivers from the Apennines, there are ranged along the Via Emilia town after town, city after city, many of which, like Parma and Modena, have played considerable parts in recent history, or, like Bologna, date back to the remotest past. Imola, Faenza, Forli have also brought forth distinguished men, both musicians and artists, and, though small, are at the present time rising communities.

Fiorenzuola on the Arda, between Piacenza and Parma, and Borgo St. Domino on the Stirone, are centres of trade for the as yet but little opened up Apennines at Monte Menegosa. Parma lies in a luxuriant plain only a few miles from the mountains, and the river of the same name flows through it. The lake dwellings that have been discovered in the neighbourhood point to very early settlements, occupied as dwelling places at a later time by Gauls and Romans. In the Middle Ages Parma was first a free city, then subject to Milan, after that a separate dukedom under the Farnese family; on their becoming extinct it fell under Spanish and finally Bourbon rule, till in 1859 the reigning family was expelled. The city has a series of beautiful churches, an interesting collection of prehistoric and antique objects, and is renowned in the history of art through the bright pictures of Correggio (Antonio Allegri da Correggio, 1494-1534) which are chiefly to be found in the Cathedral and in the Convento di S. Paolo. Round Parma are cultivated wheat, maize, wine, fruit, hemp, vegetables and rice (by the Po). Silkworm culture is flourishing, as is the manufacture of cotton and linen goods. Brickfields and majolica works make use the blue tertiary clay, in addition to which hats, furniture, pianos, carriages, etc., are manufactured here.

Reggio, called "Emilia" to distinguish it from the Reggio in Calabria, is close by and has a similar situation and a similar history, but it has never taken the leading position in any movement. There are sulphur mines in the neighbouring spurs of the mountains. The town itself has still its old walls, its regular streets and its arcades to the houses. Modena also was first a Celtic and then a Roman settlement (Mutina), and formed part of the possessions of the Countess Matilda of Tuscany. Near Reggio are still to be seen the ruins of Canossa, where Henry IV did penance to Gregory VII in 1077 in order to release himself from the ban of the Church. Modena became independent, but soon after fell into the power of the Este family, and subsequently

by marriage into that of a branch of the Habsburgs, whose rule came to an end in 1859. Roads lead from Parma and Modena into Tuscany over the Apennines. There is a remarkable phenomenon not far from Sassuolo in the small mud volcanoes with their petroleum and exhalations of gas. The immediate surroundings of Modena lie low and are damp. A small ship canal connects the city with the Po and the Adriatic Sea. The arcades in the streets and the bell tower of the cathedral are worthy of remark.

Bologna commands the most important pass over the Apennines. This ancient city is at present one of the largest places of arms in Italy ; it is surrounded by outworks both on the plain and on the spurs of the mountains. It is also an important nucleus of the railways. The number of inhabitants amounted to 147,000 in 1891.

All the nations which broke into Central Italy by the low pass at Porretta had to pass Bologna and to conquer the town for the security of their march, and from the Boii, who once established themselves there, comes its name, Bononia. From the time of the Middle Ages until 1859 the city was the seat of the Papal administration and of a famous university. At the head of the omnipotent but often disobedient clergy stood a cardinal legate, who also governed the region around, the Romagna. A tendency to strong or even violent conceptions gives a certain stamp to the Art of Bologna in sculpture and painting, which attained its clearest expression in the Carracci family and their scholars (sixteenth and seventeenth centuries).

Even from a distance the two leaning towers (Torre Asinelli and Torre Garisenda), erected in 1109 and 1110, which rise high above the houses, strike one as the symbols of the city. The streets run in straight lines intersecting at right angles. Their breadth is small, but almost all the houses have arcades, so that it is possible to walk for considerable distances without being exposed to the sun or the rain. The architecture of these "Portici," which have already been mentioned as existing in other cities of Northern Italy, reaches its climax in Bologna and gives it a unique appearance. This city is rich in churches. San Petronio of the fifteenth century, the largest edifice of the city, is still unfinished ; San Domenico, with round arches, is some centuries older. San Stephano, a medley of several churches and columned halls, is very remarkable. It is low and dates back partly to the time of the Lombards ; it was probably erected on the site of a temple of Isis.

The Municipal Museum with its rich treasures of Gallic as well as Etruscan art is distinguished by an arrangement well worthy of imitation ; it exhibits the contents of many of the tombs in the condition in which they were found, reproducing also the places where

they were discovered. The best survey of the pre-Roman period of Northern Italy is to be obtained here, and we can recognize that at the time of the Etruscan supremacy there was already a flourishing and powerful community on this site. The realistic and somewhat violent art of the Carracci, which corresponds to the popular character of the Romagnole, occupies the chief position in the gallery of paintings (*Accademia delle belle Arti*) beside the works of Francesco Francia and Guido Reni. Raphael's famous picture of St. Cecilia, of which copies are scattered over the whole earth, is also kept here. The manufactures are chiefly cloth, cotton, silk and velvet. Hemp and flax are grown in the plain and vines on the hills; good honey is also said to be obtained here. A little church on a hill, the Madonna di San Luca, is a favourite point of view and object of pilgrimage. It has a wide prospect over the fertile plain and the Apennines, the highest point of which, Monte Cimone, retains its snow-cap till far in the summer.

The ancient road along the Reno leads through a typical Apennine valley, broad and filled with detritus. It is unfruitful and waste, the loose soil and treeless heights having only a scanty covering of grass used for feeding sheep. Porretta is at the top of the pass, with its warm sulphur springs, a summer resort much frequented but deficient in beautiful and shady surroundings. The railway and road have a steep descent from this place down the Tuscan slopes to Pistoja, where the luxuriant fertile land of the Ombrone stands in sharp contrast to the monotonous land of the mountain range.

Along the Via Emilia there still remains to be mentioned Imola, a country town with plentiful vine and hemp culture and important export trade in tartar, then Faenza with excellent clays for pottery, and Forli, once Forum Livii, lastly Cesena with the best hemp of the Romagna and a few sulphur mines and quarries in the neighbourhood. In these towns games at ball are a great amusement, and in Forli they are carried on in a special hall. The inhabitants are a somewhat restless population who have taken part in every rising against the foreigners since 1815, and even now are ready for tumult. These movements are favoured by unsatisfactory economic conditions. The floods of the Santerno, the Montone, the Ronco and the Savio have repeatedly done severe damage to the fields during the last ten years and have reduced the peasants or farmers to poverty and even endangered their lives, as owing to the flatness of the region the water runs off slowly and is often some yards in depth, so that the fields are encumbered with mud and the houses have their foundations washed away or are carried off bodily by the raging waters.

## 6. THE MARCHES

The Marches, which immediately adjoin the Emilia on the east of the Apennines, extend from Rimini to the mouth of the Tronto on the Adriatic, and embrace the eastern slope of the Roman Apennines with the towns of Urbino, Macerata, Ascoli and the chain of the Monti Sibillini. This mountainous district, with a slope towards the sea, is in a high state of cultivation though destitute of plains. In front of it there is the plateau of Ancona with the important harbour of that city. The inhabitants of the Marches are not essentially different from the Romagnole, though there is some foreign blood in their veins owing to immigration from the Dalmatian coasts.

At the north-west corner is San Marino, the only city republic still existing in Italy. It has been under the protection of the kingdom since 1872. It is only 23 square miles in extent, and has 8,500 inhabitants, or 270 to the square mile. The capital is San Marino, with 1,600 inhabitants. The government is in the hands of two *capitani reggenti* with two secretaries of state, one for home affairs the other for foreign affairs and finance. Then there is a treasurer, a commissioner of justice and a military commandant. There is universal conscription and an army in time of peace of thirty men. The militia counts 950 men and thirty-eight officers distributed into nine companies. The arms are three mountain tops crowned with towers, and the motto the word "Libertas," San Marino being the land of "Eternal Freedom." Its colours are blue and white. The supreme power is vested in a Small Council of twelve members, and a Great Council of sixty representatives. The income amounts to £14,454, the expenditure to £14,275. Among the products are wine, oil, wool, cattle, leather, fiddlestrings and sulphur, but the principal one is a good limestone, the annual export of which is valued at from £2,000 to £2,500. On the other hand there is no wheat, so that in times of scarcity men are reduced to eat bread made of carob beans, which at other times are only given to horses.

San Marino itself is a small town on the slope of Monte Titano, with narrow streets in a pleasant sunny position. The climate is changeable, as the rude north wind has free access to the town, while the *scirocco* brings such hot close days that people are quite prostrated by them.

Many attacks by neighbouring rulers or by the Pope have been bravely resisted by the inhabitants, notably the expedition of Cardinal Albuoni in 1740, and thus, assisted by the remoteness of their district, they have preserved their liberty. It is an evidence of the healthy spirit of the population that the very attractive proposal made by several banks to establish an international gaming table there was immediately declined.

Urbino, the birthplace of Raffael Sanzio, lies south of San Marino,

in the mountains between Foglia and Metauro. It contains the palace of Duke Federico Montefeltro, a much admired building which rises high above the town. Outside, the gates are flanked by two vast towers, and it incloses a series of quadrangles built in the finest Renaissance style.

On the Adriatic, at about the same latitude as San Marino and Urbino, are three harbours, Pesaro, Fano and Senigallia, all founded by the Romans, which carry on a lively trade in fish and in imports for the neighbouring inland country. Then to the South follows Ancona. This city, at present one of the most important harbours on the eastern side, was founded by the Syracusans, and colonized by the Romans, who largely extended its maritime advantages. Trajan, for instance, constructed a mole to protect the harbour basin from the east wind, and as a mark of gratitude a triumphal arch was erected in his honour which still stands at the commencement of the dam. At a later time the importance of Ancona diminished, and in the sixteenth century the jealousy of the Venetians prevented its revival. The Popes of the last two centuries did a great deal for the shipping trade of Ancona, and so has the unified kingdom. The city is built between two promontories like an amphitheatre on the northern slope of Monte Conero, a mountain which rises in front of the Apennines but is isolated from the range. The streets in the lower and older portion of the town are narrow, but there is a new quarter on the heights with wider streets. The fortification on Monte Astagno commands the whole.

The most famous place in the Marches, indeed, is Loreto, an object of pilgrimage, situated about fifteen miles south of Ancona. Here the Holy House of Mary is an object of devout worship. In the middle Ages Loreto was a shrine of the first rank to which penitents, bringing rich offerings, made pilgrimages in crowds. The most important sculptors, such as Bramante and Andrea Sansovina, took part in the adornment of the church and the enclosure, within which is the plain brick building, the Sacred House. Shrines, churches and chapels in honour of the Madonna di Loreto are scattered all over the world. The pilgrimages have, however, diminished in number during recent years, other shrines, such as Lourdes, having had more attraction for believers.

The shore of the Adriatic from Ancona is barren and has only a few fishing villages, but the hills farther inland abound in small villages, bosomed in green, where hemp, flax, wine, oil and mulberries are cultivated : then a good deal of live stock is raised, and trade is carried on in these as well as in the hides, wool and gut obtained from them. In ancient times this district was called Picenum, which was then, however, more extensive, than the Marches of the present day as it

reached south to Gran Sasso. Besides the ancient Firmum, now Fermo, there were the towns of Macerata, Ascoli and Tolentino, with Camerino which was beyond the boundary of Picenum. Macerata, prettily situated on a hill and surrounded by a medieval wall with thirty-three towers, was founded on the site of Recina, an ancient Roman colony. Like many Italian towns, it had a university; but this dwindled in course of time, and now carries on a wretched existence with a single faculty, that of jurisprudence. Tolentino has supplied a number of objects of pre-Roman art from the neighbouring metropolis of its earliest Picentine inhabitants. Camerino, on the western side of the Monti Sibillini, used to belong to Umbria. It is an out of the way town with a university which, like that of Macerata, is in a state of decay, being attended by few students and poorly endowed.

Ascoli, on the other hand, is a flourishing town. It is on the Tronto at the southern boundary of the Marches, and was formerly called Asculum and Truentus, and is now distinguished from another place of the same name by the epithet "Piceno." This ancient city is surrounded by cornfields and meadows; it contains many antiquities and is the seat of a prefecture. It is possible to make one's way to Reti in the Sabine mountains by going up the Tronto and over the plateaux in the dip between Gran Sasso and the Monti Sibillini, or by following the Velino, but the way is less frequented than that from Chieti along the course of the Aterno, the route taken by the railway.

## 7. TUSCANY

The districts of Tuscany and Umbria, consisting of the southern slopes of the Etruscan and the western side of the Roman Apennines, have been since ancient times far more important in the development of the country than the Marches. The Tuscany of to-day, corresponding to the former Grand Duchy, embraces the basin of the Arno, up to the source near the Val di Chiana, and the basin of the Ombrone and its tributaries. In the south-east it adjoins Umbria, in the south at the latitude of Lake Bolseno it adjoins the Roman Campagna, the States of the Church before 1870. To it also belong the islands of the Tyrrhenian coast, what is called the Arcipelago Toscano.

Tuscany is fertile and hilly, with numbers of ancient cities on the heights or on the spurs of the mountains between the gorges. The heights which are irregularly distributed at the Tyrrhenian Sea, arrange themselves further inland into chains parallel with the Apennines, while at the same time they do not increase in height, and their valleys decide the direction of the rivers Era and Elsa, which flow into the Arno. The Arno originally ran in the same direction, but it broke through the chain and created the moist plain of Pisa, the strand

of which is slowly advancing on the sea. These plains, as well as the stretches of shore between the Arno and the Orbetello, are marshy and centres of malaria. On the whole, however, this division of the country is healthy, if we omit certain narrow valleys and low-lying localities.

Tuscany, together with what is now Umbria, formed ancient Etruria, and was already in a high state of cultivation before the time of Roman rule. Etruscan remains are met with everywhere, in the form of cities, burial places, inscriptions and countless objects of daily life turned up by the spade or the plough. From the time of the Migration of the Nations, beginning with the rule of the Ostrogoths and the Lombards, it fell historically into the background. In the Middle Ages the Counts of Tuscia held extensive domains and were even able, as in the case of the Countess Matilda, to bid defiance to the Emperors. The country again began to play a part in universal history at the time of the growing independence of the cities, and to be an important factor, as in the ancient Etruscan period, through the development of commercial life. Pisa, later on Florence, Siena, Lucca, Pistoja, and last of all Leghorn, became famous as centres of trade and homes of art and learning, in spite of numerous civil wars, while feuds with the Pope, the Lombard cities, or foreign conquerors, French or Spanish, absorbed a great part of the national strength.

The Tuscan dialect and the polite conversational forms of Tuscany have spread to such a degree that this province has given a spiritual impress to the whole country. The high pitch of prosperity attained by Florence under the earlier Medici, the foundations of which were laid by the great writers of the foregoing period, essentially furthered this process; but it owed still more to the fact that Tuscany was never permanently subjected to the benumbing Spanish rule and the drivelling government of the Popes, and was thus in a position to maintain trade and intellectual life. The Grand Dukes of the Medici family and those of the House of Habsburg later on really cared for the country without exhausting it, so that, leaving Sardinia out of the question, it enjoyed a relatively good government till 1859.

At the present time, too, Tuscany offers a delightful prospect, with its rational system of cultivation, its productive vineyards and olive groves, its green meadows, its excellent live stock, its Leghorn trade and its manufactures. These last have their central point in Florence, but descend even to the small towns. Silk, straw hats, jewellery and majolica are the chief products and are exported to all parts of the world. Then there are copper, lead, and silver mines in the north and the south, and iron mines in Elba. Roads kept in good condition, a network of railways and many tramways traverse the valleys, and facilitate the sale of produce.

We have already spoken of the northern section by Carrara and Pontremoli, we may, therefore, recommence our description there, and treat, first, the valley of the Arno. At the foot of the Apuanic Alps, an offshoot of the Ligurian Apennines, stands Pisa. Once a powerful trading city that ruled the sea with its fleet, it has gradually been pushed inland by the alluvium of the Arno and the Serchio. It lost its political and commercial importance by being conquered by Florence, and now presents the appearance of a dead city with wide silent streets, and many buildings recalling its past greatness. The focus of medieval Pisa is the Cathedral Close with the cathedral and Norman Churches and the Leaning Tower. The cathedral is one of the oldest buildings in the Tuscan style, which consists in casing the exterior with marble of various colours. The façade is adorned with rows of arches, it runs up to a point, the arches getting shorter and shorter, and ends with the gable of the nave. There are many similar churches in this region, e.g. San Michele in Lucca, for which that at Pisa, which was erected after 1063, must have served as a model. The Leaning Tower is the chief object of attraction, though its inclination does not appear to have been intentional. It is of a cylindrical shape and has many stories surrounded with columns. Its summit overhangs to the extent of thirteen feet, and its stability is due partly to the fact that the centre of gravity does not fall without the base and partly to the building having circular walls, which gives them great cohesion. The famous cemetery (Campo Santo) is hard by ; there the Pisans of distinction rest in earth brought from the Holy Land, and the inner walls of the tombs are richly adorned with sculptures and pictures, a tasteful arrangement which has no equal in Italy.

The plain of Pisa is full of well-watered meadows used for grazing cattle and breeding horses. There are factories of many kinds in the villages, where the water of the streams or the powerful springs rising from the ground supply the power required for the work. Often, it is true, this water is brackish, a sign that the low ground was once a sea bottom and that the salt of the deposits is not yet completely washed out. The sediment of the Arno and the other streams produces a tuffaceous limestone useful for building purposes.

The warm sulphur springs of Lucca take their rise above Pisa on the other side of the Monti Pisani. The city is situated in the green valley of the Serchio which, being sheltered from the north wind, is planted with orange trees. It was long the seat of a separate ruler, but in 1847 it was annexed to Tuscany. The city is still completely girt with her old walls ; it has a series of remarkable churches of the twelfth and thirteenth centuries, of which the Cathedral of San Michele has been already mentioned. The baths, with their columned halls,

parks and hotels, are some way from the town, and the different springs stretch for some miles along the foot of the heights. The valley of the Serchio is also remarkable for its silk and wool factories.

The trade of Pisa and Florence has at the present time passed to Leghorn (Livorno), a community of 106,000 souls. A small harbour stood in ancient times at the southern point of the plain where, owing to currents along the coast, the deposit of alluvium is least. This was fortified by the Pisans in 1392, but lost most of its population by sickness. When the Florentines, after subduing Pisa, perceived that the harbour of that city was not to be saved, they enlarged Leghorn and gave it the rights of a free port where any one might trade without distinction of creed. Thus it has come about that even at the present time the population is very mixed and contains a great number of Jews. The synagogue at Leghorn was long held to be the finest in Europe, and mention has already been made of the Hebrew printing presses and of the book trade with the Orient (p. 311). The climate, however, remained unhealthy until the Grand Dukes Ferdinand III and Leopold II improved the drainage and the water supply.

The harbour, which has been repeatedly enlarged, suffers from not having the natural protection of a promontory, although it has been rendered calmer by means of an artificial island; it is very difficult to enter in rough weather. The carrying trade to and from the East, for which Leghorn was formerly famous, necessarily declined when the other nations discovered the direct route to India, and it is at present essentially a port for Italian exports and imports. Agricultural produce, straw hats, boracic acid, alabaster, iron ore from Elba, coral, ropes, hemp and fish are the principal articles of export, while corn, cotton, raw silk, wood and colonial goods are imported. The harbour is always busy, as there are wharves for warships and trading vessels, and there are also numbers of artisans at work. The town itself has quite a modern character, and, like all large trading cities, it is dirty and evil smelling.

Going up the Arno from Pisa we reach Pontedera with its numerous factories, farther on Empoli, and finally, after passing through the part of the valley which is contracted where the river breaks through the chain, we come to the wider space in which Florence is situated. This is a thickly inhabited hilly country planted with vines and olives and mulberries, which stretches parallel to the range between the chains of the Apennines past Prato as far as Pistoja at the foot of the Bolognese chain.

Florence (Firenze), a community of 100,000 inhabitants, is surrounded by villas and mansions. It stands on both sides of the Arno, which is crossed by several bridges just at the point where it emerges from

the Apennines into a longitudinal valley. Favoured by its moderate and healthy climate, Florence has been populous since the time of the Middle Ages, especially as it has been almost uninterruptedly the capital of a separate State. The Medici, and after them the Habsburgs, created splendid palaces and valuable art collections in this their place of residence. After a short interruption, 1860-1867, Florence was for four years the capital of the kingdom of Italy, until it had to resign this honour in favour of Rome. The last changes, especially the removal of the Government to Rome, did not take place without severe loss to the town, but while Pisa only interests us by its past, Florence has, in addition to its innumerable historical memorials, a lively trade, and a not unimportant industry which it has partly preserved, partly created anew.

It is obviously impossible to enlarge here on the numerous art treasures stored up in Florence. What the Piazza of St. Mark is for Venice, such is the Piazza della Signoria for Florence, the focus of political life in its good and bad sides.

Crowded together in a narrow space are the massive buildings of the Badia, the Bargello, the Palazzo Vecchio, with its high overhanging tower, the graceful Loggia dei Lanzi, and the buildings of the Uffizzi running down to the Arno. The city abounds in characteristic private houses built by the great families, especially in the Via Tornabuoni, and the Via del Corso with its continuation the Borgo d'Albizzi. The splendid cathedral of black and white stone, with its bell tower, one of the chief monuments of Tuscan architecture, has recently had a decorative façade added to it. Large areas in the interior of the city are occupied by monasteries, such as Santa Maria Novella, Santa Croce—once a Franciscan monastery, and containing many monuments, Sta. Annunziata, with a richly ornamented church, and lastly San Lorenzo, with the magnificent tombs of the Medici, the creation of Michael Angelo, and adjoining them the unique Biblioteca Laurenziana.

Of the art collections the Bargello contains Florentine sculptures and articles in use at different periods. The galleries of the Uffizzi are famous for their pictures and antique statues, among which are the Niobe group and the Venus of Medici. By a passage leading over the Ponte Vecchio we pass from the Uffizzi to the Palazzo Pitti on the left bank of the Arno. In this gigantic building, simply but tastefully kept up, there is a second collection of pictures with a series of the most famous works of Raphael. Behind the palace there are well tended gardens (Giardino di Boboli) reaching up the hillside and affording, from their highest point, a splendid view over the river and the city. A second point on this side is the Piazzale Michelangelo, to which from the Arno a grand flight of steps and terraces rises

to a rotunda. There are also pleasant drives with varying views now over the towers of the city, now on green garden-like valleys running up into the hills, and these are generally thronged with promenaders in the afternoon and evening. The regular drives in the Corso taken by the Florentine nobles are, on the other hand, usually extended to the Park of the Cascine on the right bank of the Arno below the city, where the fashionable world assembles.

The neighbourhood of Florence affords many wonderful points of historical and artistic associations. Not far off on the left side of the river stands the church of San Miniato al Monte, partly built of ancient columns in late Norman style like the churches of Pisa. Visits are often made to the Certosa di Val d'Enza, a fortress-like monastery beautifully situated, and to Fiesole, the old Etruscan city, on a commanding height some five miles north-east of Florence. The walls of mighty blocks of freestone fitted together bear evidence of an Etruscan settlement. They are drawn around the top of the hill, making them almost impregnable, while the inhabitants had free view over the whole valley at their feet. The present town, with its narrow streets is, as it were, nailed to the rocks, and is topped by the cathedral, from which opens a most glorious view. Like Fiesole all the towns round about Florence carry on straw plaiting and supply a considerable part of this speciality of Tuscany.

Going up the Ombrone from Florence we reach the district of Prato and Pistoja, which is at the foot of the chain that ends with the Prato Magno. Pistoja, with an irregular oblong circuit, no longer fills the circuit of its walls, but it is a thriving town with silk spinning, woollen cloth factories, tanneries and iron foundries. It dates back to the Etruscan period, which is easily explained by its position on the ascent to the lowest pass of the range. Here, too, there is a cathedral : it is of the twelfth and thirteenth centuries, and is in transitional style.

On the Upper Arno the turn of the river at Pontassieve marks the spot where the Sieve, after its first course in a longitudinal valley, breaks through the Prato Magno chain and falls into the main stream. Higher up the valley this latter had to make itself a bed in course of time and apparently formed a lake. Bones of diluvial or later Tertiary Mammals, excellently preserved in the mud and tufa of this collection of water, give us information as to the wealth of the fauna of the time. The most numerous were the deer, with antlered horns far surpassing the species of our time in size and breadth. Then there were rhinoceroses, elephants, oxen, bears, and large Felidae. The Prato Magno chain is one of the few well-wooded sections of the Apennines and has been turned to advantage as a school of forestry, which has its seat in the ancient remote monastery of Vallombrosa, surrounded by

monotonous woods. The forests of the domain embrace 3,700 acres and have holdings of various kinds well adapted for the study. In the School of Forestry there are seven professors with from 25 to 30 students who have to take a three years' course. Clinging to the foot of the Prato Magno the Arno Valley runs to Arezzo before it bends round into its earlier direction and leads up to the source of the river on Monte Falterona.

Arezzo lies in a more open and fertile region. It was one of the twelve cities of the Etruscan Confederation, to which belonged also the more southerly towns of Cortona, Chiusi, and Perugia. Owing to the increase of swamp in the valley of the Chiana, Arezzo had lost both in importance and in the number of its inhabitants during the Middle Ages, but recently, after the soil was made healthy, its agriculture and manufactures raised it to the condition of a prosperous and clean country town. In ancient times, as at present, its prosperity was due to its position on the road which connects the basins of the Arno and the Tiber along the Chiana, the route now taken by the railway from Florence to Rome, but abandoned in the Middle Ages on account of fever. (Cf. p. 96.)

Cortona, another Etruscan city, stands on an elevation which falls away abruptly on all sides, high above the soil of the central part of the Val di Chiana. Here, too, we can recognize the old walls of great blocks of freestone, and the neighbourhood has supplied many inscriptions and sepulchral discoveries. In the Middle Ages the city was a strong fortification, finally coming into the possession of Florence. It was the birthplace of Luca Signorelli, a master in the art of fresco painting. At the southern end of the Chiana valley we have Chiusi, the ancient Clusium, a third Etruscan city, in a lofty situation and surrounded by an extensive Necropolis. The ground underneath the ancient city is traversed by narrow winding passages. These were, perhaps, for drainage purposes, as the Etruscans were the instructors of the Romans in artistic subterranean work. In spite of its high position the population nearly died out in the Middle Ages in consequence of malaria.

West of Chiusi rises the extinct volcano of Monte Amiata (5,640 feet) an isolated bell-shaped mountain of gentle ascent and visible from a great distance. A series of smaller streams, such as the Paglia, the Fiora, and the Albenga take their rise in it. The main part of the mountain, like the Dômes in France, consists of trachyte, while the heights of Radicofani are covered with basalt and the hot springs containing boracic acid appear to be the latest manifestation of the volcanic force, the chief activity of which was in the Middle Tertiary period, when this district

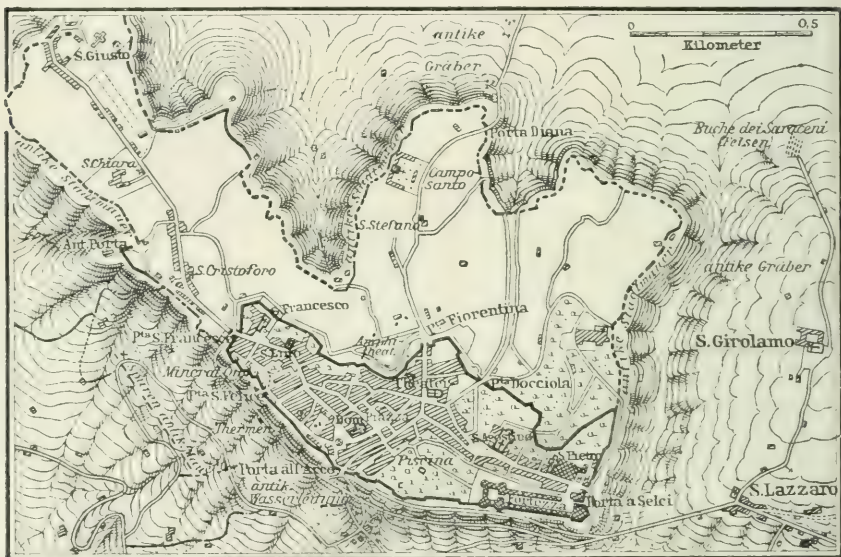
was still covered by the sea so that the mountain, like the Lipari Isles, rose steaming from the water. In recent times people have prospected on its flanks with success for cinnabar and quicksilver, which fill up singular pockets and nests in the Eocene strata. Its northern foot is washed by the Ombrone, which falls into the sea not far from Grosseto and forms a valley which reaches up to the Monti di Chianti and thus near to the valley of the Arno. The vast masses of débris transported by this river in floodtime have created the marshy land at both sides of its mouth. This part of the Tuscan coast, called "Maremma," has, however, been "bonificato" by means of a system of *Colmate* to which the Ombrone is specially suited on account of its masses of débris. (Cf. p. 98.) Apparently the place of this marsh land was formerly occupied by a deep bay which served as harbour for the Etruscan trading city of Vetulonia, often mentioned in ancient writings. Its exact position, it is true, is not certainly known, but it is considered by many inquirers to have been to the north-east of Grosseto, on the slope of Poggio Ballone, an isolated limestone cliff jutting into the sea. The Ombrone, protected by the promontory of Monte Argentario, has slowly pushed its mouth forward into the sea, thus dividing into two what was originally a single bay.

Of the same age as Mount Amiata and obliquely opposite to it, in the middle part of the river and on the right bank we have a trachytic mass at Roccastrada, and isolated cliffs of the ancient Mesozoic range at Massa Marittima and Campiglia Marittima. These two last named towns have mines of copper, silver, and lead in their neighbourhood. The ores are found in veins or pockets, in very various kinds of rock. This mining possibly dates back to the Etruscan period and was carried on especially by the inhabitants of Populonia, which is said to have stood on the north side of the peninsula of Piombino. But there too the ground on the coast must have essentially altered since that time, and the southern flank has become very swampy, either in spite of or on account of the floods of the Cornia, for opinions differ on the subject. The position of Populonia over against Elba made it possible to utilize advantageously the iron deposits of the island.

From Piombino to Leghorn the coast is a flat sandy beach at about the middle of which is the mouth of the Cecina. This small river comes from the other side of the mountain of Roccastrada, and describes a wide curve through Western Tuscany. On one of its northern tributaries the Etruscans founded Volterra (Volaterræ) on a height, strong as being steep all round. It was once a populous town, as we learn from the well-preserved Cyclopean walls all round it of  $4\frac{3}{4}$  miles in extent. The town, like Girgenti in the ancient Akragas, only occupied the highest part of the cliff. It enjoys a splendid view over the fertile

land and the distant blue sea with the islands of the Tuscan Archipelago.

The soil contains gypsum, especially the fine-grained transparent variety called Alabaster, so that an export trade has been established in the stone and things made from it, as well as works for the carving of this soft material. For the rest the Etruscans made use of alabaster, as is proved by the rich collection in the museum, derived from the neighbourhood of the town. The soft and marly rocks connected with the occurrence of blocks of gypsum make a very unsatisfactory foundation, as they are apt to dissolve and form landslips after heavy rain, while in dry weather they become as hard as stone and split into



PLAN OF VOLTERRA.

The whole plateau is surrounded by the Etruscan Walls.

wide rents. This is the case not only at Volterra, but at many other places in the central hills of Tuscany, and it often prevents the utilization of the slopes, or causes unavoidable expense in the way of walls for support. The whole district between Volterra, Siena and the foot of the Monti di Chianti suffers under this drawback; it is otherwise in a state of high cultivation. In the lowlands and valleys corresponding to the varying geological formation we have tracts of moist land in which rise springs with a strong deposit of tufaceous limestone, above these are gentle slopes of soft soil, excellent for wine-growing and, if irrigated in summer, suitable for planting of all kinds, while higher up often present themselves immediately, grey limestone cliffs with

an edging of olive trees, with underwood on the pinnacles or scanty pastures on the plateaux. This configuration of the land recurs again and again in Italy and is to a certain extent typical of the country.

In a region of this kind in the heart of Tuscany and at the foot of the Montagnola Senese lies the three-branched city of Siena. It is surrounded by gardens and is above two marshy depressions (*Piano del Lago* and *Piano del Ponte*). Here an independent republic of high prosperity and wealth arose in the Middle Ages after many struggles, on the site of a Roman Colony, which lasted till the Medici imposed their suzerainty on it. The city is famous for its cathedral built of stones of various colours, and richly ornamented with colours, inside and out; its *Palazzo Pubblico*, dating from the end of the thirteenth century, and numerous pictures of Sodoma distributed in its churches and galleries. The clays of the Hill of Siena have been extensively applied to pottery and tilemaking from ancient times. The city is still of great importance as the seat of a prefecture and a university. It manufactures woollen and silk goods, hats, leather, paper and ribbons, and is the central point of Tuscany. From this region come the high priced *Vino di Chianti* and good olive oil. The air of Siena is considered especially healthy and it is much visited by those suffering from the fevers of the Maremme. On the other hand, the ground is not quite safe, as the Siena district is just the one most visited by earthquakes, often very violent ones, the cause being the disintegration of the Mesozoic strata below and the washing out of the limestone by trickling water.

San Gimignano, in the valley of the Elsa, is a very singular town. It is well called the "City of Towers" on account of the slender quadrangular towers erected in the thirteenth and fourteenth centuries as fortifications, even in the interior of the private palaces, many of them being still preserved.

This country town, with its gloomy Gothic edifices built of huge blocks of stone and having pointed arches to their windows, makes an impression which cannot differ much from that made by a genuine medieval city, and owing to the remoteness of its position it has escaped the transforming influence of time.

In conclusion there remain of Tuscany only the islands to be alluded to.

From the latitude of Leghorn to Monte Argentario these islands form a curve in front of the coast, embodying as it were the condition of the hinterland in Tertiary times, as they consist of masses of crystalline rocks or of Mesozoic limestone. Piombino and Monte Argentario, which once belonged to them, have been united to the land by littoral

deposits, though the water has remained in the rear of the last named in the lagoon near Orbetello. This city and fortress stand in the midst of a swamp and are almost abandoned in summer on account of the fever. There is nothing special to say of the islands of Gorgona, Pianosa (4 sq. miles), Monte Cristo (4 sq. miles), Giglio (8.2 sq miles), Capraja (7.6 sq. miles) and Giannutri.

The only island of any importance is at the same time the largest, namely Elba, the ancient Ilva. This has 89 square miles of area, a length east to west of 15 miles, and a remarkably irregular shape. In the west rises Monte Capanne (3,342 feet), a mass of granite sheathed at the foot with slate. To the east of this is a central elevation running north and south, of which the principal rock is porphyry and which has the seaport town of Portoferraio at its northern end. The third section is a fragment of the chain of the Apennines, and rises in the N.N.E. almost like an island, while the fourth part, Monte Calamita, forms a smaller but similar pinnacle to the north-east. Except at Monte Capanne there is no want of bays and harbours, on the north side there being the Golfi di Procchio and Portoferraio, on the south Golfo di Campo, Golfo dell' Acona and Golfo della Stella, and on the east the deep bay of Porto Longone.

The climate is mild and is made equable by the neighbourhood of the sea, the average temperature in the winter being 50° F., and that in the summer 72°, never rising above 86°. The rainfall is 63 inches, with a maximum of 32 inches in November and December and a minimum of .76 and .56 inches in June and July. The whole island is consequently cultivated to the highest degree, producing wine and olives on terraces, and fruit on the slopes. The heights, it is true, are bare or only overgrown with scanty underwood; many parts, in consequence of the hardness of the rock and the steepness of the mountain slopes, are covered with broken stones, the forests having been felled and the mould washed down. The importance of Elba lies in its iron ore, which forms pockets and lodes in the limestone at Rio Marina, at the Cala, at Sassi neri and on Monte Calamita, at the two first places along the steep face of the cliff, so that it can be obtained by a kind of quarrying without any deep mining. The particulars of the export and the yield of ore have been already communicated under the head of mineral products (p. 172).

The population counts some 25,000 souls, some of whom work in the iron mines or at the cultivation of the gardens, and some are engaged in fishing. Besides the tunny, there is the still more important sardine fishery. The fish when caught are salted and sent to Leghorn whence they are exported.

The island gained a name in recent history by the residence there

of the dethroned Emperor Napoleon I (May 1814 to February 1815). The ex-Emperor, until his adventurous return to France, occupied a villa on the slope of Monte San Martino in the middle of the island, in a high situation with a view over the sea on both sides. In earlier times the Tuscan Archipelago belonged first to the Pisans, and then to the Florentines, Elba in particular having been fortified by Cosmo I, and offering successful resistance to the attacks of the Turks in 1564 and 1588. In 1815 all the islands were incorporated with the Grand Duchy of Tuscany.

#### 8. UMBRIA

The country called Umbria embraces the valley of the Tiber nearly from the source to Orvieto and also the mountain chain with the tributaries on the left flank, the Nera and the Velino. Ancient Umbria extended farther east, as far as the Adriatic coast between Ancona and Rimini, but was narrower to the south and west, as the Tiber formed the boundary. The principal road of the country, the Via Flaminia, ran from the Valley of the Nera over the mountains to the Upper Metaurus, descended along this river to the sea, and then followed the coast to Ariminum, where it joined the Via Æmilia.

Umbria is a land of mountains with only a few plains of limited extent in the elevated valleys. These, shut in by high limestone chains, have a caldron-like character. All the level portions and the lower slopes of the mountains are densely peopled and covered with a luxuriant cultivation, while the crags on the mountain tops are planted with underwood or forest. It is called "Green Umbria" on account of the trees scattered over the whole country, and is considered by the Italians as one of the jewels of their fatherland. It owes its plentiful growth of trees to its relatively high position, its cool temperature and its abundant rainfall, which keeps the plants fresh and green even in the summer.

The sources of the Tiber at Monte Comero in the Etruscan Apennines belong to Tuscany, as well as the widening of the valley at San Sepulcro, where tobacco is grown successfully as it is protected from the north wind and supplied with the necessary moisture. At San Sepulcro the railway from Cortona crosses the chain to Arezzo in the valley of the Arno and then up the Tiber until at Umbertide, at the same altitude as Cortona, it turns east over the main ridge on its way to Ancona, thus connecting the Tyrrhenian coast with the Adriatic.

There are no important towns till we come to the middle of the valley of the Tiber and its side valleys. The first to be named is the quaint Perugia, now Perugia, another of the twelve cities of the Etruscan Confederation, the chief town of Umbria and the seat

of a University. Etruscan particularism seems to have maintained itself for a long time in this strongly fortified town which offered a heroic resistance to the Romans at the time of the Perusian War in 41-40 B.C. The city was a Roman Colony till it was destroyed by Totila. It was afterwards rebuilt and shared the varying fortunes of the Tuscan cities during the party warfare of the Middle Ages, falling finally under the domination of the Pope. In the fourteenth and fifteenth centuries a school of painting arose there, the masters of which, such as Pietro Vanucci (1446-1524), called Perugino, were the forerunners and teachers of Raphael and of other great painters.

Like Siena, Perugia is of an irregular form which is determined by the topography of the heights. It has a glorious position with wide open views over the neighbourhood, which is sprinkled with country houses. Its manufactures are of little importance. Besides some wool and silk weaving, there are factories for wax and liqueurs, and some well known confectionery works. Otherwise the trade is limited to agricultural produce.

About twelve and a half miles west of Perugia lies the shallow Lake Trasimene with the railway connecting Perugia and Florence on its northern edge on its way to Terontola in the valley of the Chiana. At Lake Trasimene—the exact spot is not known owing to the rise in the surface of the lake—the Romans were overthrown by Hannibal in 217 B.C. Owing to the small depth of the basin the draining of the lake into the Tiber has been taken in hand, partly to make the region more healthy and partly to gain fertile land. The work was begun on September 26, 1896, and the canal was opened on October 2, 1898, so that by the end of the century the lake will have almost entirely disappeared from the map. The banks are low; corn is grown for a great distance round, with vines and olives at the northern edge, where they are somewhat steeper.

Assisi is at nearly the same distance from Perugia on the other side. In this little town, built on the heights above a tributary of the Tiber, lived Saint Francis of Assisi, the founder of the begging order of the Franciscans. He was buried in the vast monastery on the hill side. A triple church rises above his plain stone coffin, which was a famous object of pilgrimage for centuries. The monastery, now closed and appropriated by the State, has been turned into an Educational Institution.

The railway leading from Perugia to Rome past Assisi first touches Foligno, then Spoleto, reaches the Nera Valley at Terni and follows this to Orte, where it joins the main line at the river Tiber. Spoleto is an ancient settlement at the foot of a hill and at the bottom of a circular depression, and was colonized by the Romans in the third

century before Christ. It is a kind of centre for the low valley of the Topino, which opens upon the Upper Tiber. The trade is pre-eminently in agricultural produce, chestnuts, corn, fruit, cattle and pork. Truffles and vegetables are also said to be exported, and there are factories for weaving, hat making, etc. Spoleto enjoyed its highest prosperity under the rule of the Goths and the Lombards, and owes to one of the Lombard Dukes its huge aqueduct, the Ponte delle Torri, spanning a ravine.

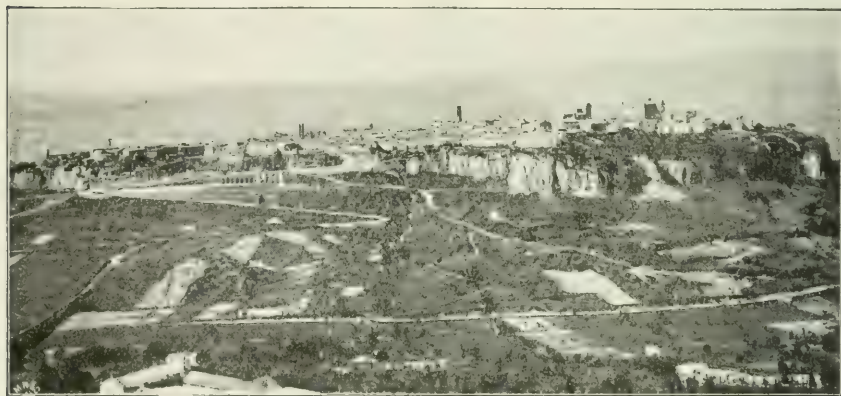
Terni is well known from the Falls of the Velino in the neighbourhood. (Cf. p. 101-2.) With the exception of some foundries, the water power of the river is made use of by all kinds of factories, smithies, weaving mills, paper mills, etc., and this has brought life into the otherwise quiet little country town. The inhabitants of the Nera and Velino valleys also get good returns from trade in live stock and the export of an especially choice olive oil; the hills and woods are good for raising goats, sheep and pigs. The peasants work up the wool in private looms and sell the bristles and skins.

From Terni the railway line branches off, mounts by a tunnel to the elevated valley of the Velino, reaches Rieti and then crosses the different mountain chains to Aquila; it then proceeds to Chieti by the Valleys of the Aterno and the Pescara till it strikes the railway of the Adriatic coast. This is the second important line across the peninsula, the lines in Southern Italy by way of Beneventum and Potenza being the third and fourth. Rieti, in a fertile elevated valley, formerly suffered from swamps, as the Velino impedes its own course over the threshold of the waterfalls by the deposition of tufa. For this reason drains have been constructed since Roman times, though never, it is true, with permanent success; however, they have made the neighbourhood of the town tolerably dry. This range is called Monti Sabini, after the former inhabitants. It is a limestone region with strongly marked resemblance to the Karst of the Tyrol.

In the south-west of Umbria, where it adjoins Roman territory, we ought to mention a singular city of great antiquity called Orvieto, to which even the Romans gave the name of *Urbs vetus*. It is due to the neighbourhood of the volcano at the Volsinian Lake that the mountains and hills here are covered with volcanic tufa, and the steep walls produced by the crumbling away of this, under the influence of rain, contrast strongly with the surrounding country beneath. On a plateau of this kind falling away all round at the river Paglia just before it enters the Tiber, the Etruscans built a city and fortified it with walls along the steep edge. Below in the tufa they excavated their burial places, using the material thus obtained for making their fortifications higher. As the city lies 700 feet above the valley the roads

have to wind greatly in getting up to the heights, and recently a cable tram has been constructed from the station to the top.

Orvieto deserves fame for its glorious cathedral as well as for its Etruscan antiquities. Like the cathedral of Florence, it is built of black and white marble, and it is one of the finest monuments of Italian Gothic, with its many-coloured pictures on the exterior as well as the interior. Another remarkable thing is the well, 200 feet deep, belonging to the former fortress, which was commenced in 1528, when there was a want of drinking water during a siege. Two winding staircases of easy slope are cut in the rock down to the surface of the water, so that mules can go down one and up the other without interfering with one another. It is only in the volcanic tufa, easy to cut



VIEW OF ORVIETO

With the plateau of volcanic tufa and its steep descent. In the background the gentle slope of the volcano of Bolsena.

and yet of sufficient strength, that such works can be made, and the similar constructions such as the Catacombs at Rome, the outlets of the Alban Lakes and the Etruscan burying places of Southern Etruria are all excavated in this stone.

#### 9. LATIUM

Under the designation of Latium are comprehended the lands round the capital, Rome, stretching from the Volsinian Lake to Terracina, and from the sea to the Middle Tiber, the Sabine Mountains and the western chain of hills bounding the plateau of the Abruzzi. With the exception of the limestone mass at the edge and the Monti Lepini, it has a volcanic soil, the centres of eruption being the Alban Mountains and the volcanic lakes, Bolseno and Braccia, with the Ciminian range between the last two.

The look of the country changes very quickly. In the mountains of Tivoli, Alatri and Monti Lepini, we have normal Apennine chains, with dry plateaux above, well watered valleys often marshy and filled with travertine and with a karst-like appearance so far as the limestone extends. In the section north of the Tiber, over the tertiary, irregular subsoil, lies a vast covering of volcanic tufa in which deeply cut river beds have developed, running some to the Tiber, some to the sea. The source of these is to be found on the summits or the craters of volcanoes resting on broad bases and with gentle ascent.

South of Rome the tertiary formation is at a much lower level, so that there was an arm of the sea of late tertiary or diluvial character, which has spread out both the volcanic ashes, and the sediment and travertine brought by the Tiber, and thus formed a plain. Out of this rises the isolated Alban range (Monti Laziali), doubtless at one time a volcanic island. The double circumvallation and the craters, full or empty, give most picturesque effects. The sandy sea shore, perhaps at present sinking, is marshy but set with separate cliffs, such as Cape Circeo and the limestone cliffs at Porto d'Anzio. The mouth of the Tiber, originally at a spot now far inland, has made its way out past the Roman ports and has covered the banks on both sides with sand.

All the flat land near Rome is called the *Campagna di Roma*, a name sometimes extended to the whole volcanic district on both sides of the Tiber. The vegetation on the slopes of the Apennines consists again of underwood or forests on the high plateaux, except where there are only scanty sheep pastures, and of stony dry cornfields, not very productive, lower down. Vines and olives grow on terraces in the valleys; wheat, tobacco, vines, oil, fruit, in short, everything that a rich soil can bring forth flourishes in Southern Umbria on the hills and fertile slopes. The broad basin of the Tiber is pebbly and only used as temporary pasture, the basins of the Etruscan streams with their steep walls are almost inaccessible and are reputed unhealthy.

The Romagna in the narrower sense was once rich corn land; at present it consists of unproductive grazing farms, and only serves for raising cattle and horses. The stretches of coast, such as the Pontine Marshes, are held to be the worst of the fever districts. In some places they have recently been planted with fir or eucalyptus, in others there is a scanty population living in the marshy meadows who suffer from the climate. Tolerably cold and troubled with snow in the winter, this Roman district suffers in summer from oppressive heat which quite parches the soil and produces infinite dust. Then in spring, and even more in autumn, there are the inundations of the Tiber, the devastations of which affect even the lower portions of Rome.

¶The thousand years of ecclesiastical rule have kept the country people in a very backward condition ; the South Etruscan, Sabine and Volscian villages or towns are wretched, smoky, dirty, but often extremely picturesque nests ; their inhabitants are ignorant and savage, and in the Campagna they are to great extent good for nothing, in individual cases resorting to robbery or murder through want. The highest elegance of modern culture in the capital is in almost immediate contact with the primitive existence of the Campagnole, who lives in a hut of reeds with wife and children and has scarcely the most necessary utensils. Connected with this sharp social contrast is the tendency to brigandage, a constant scourge of the States of the Church. and connected again with this insecurity is the small number of farmsteads standing alone, while in Tuscany and Umbria these become more numerous in the neighbourhood of the towns. The population, with the exception of the larger landowners and farmers, who from the quantity of their cattle are able to dispose of a number of men and thus have the necessary protection, is almost entirely concentrated in towns large and small, for the most part places which played a part in the Sagas and histories of Etruria and Rome.

Let us begin the detailed description at the Volsinian Lake. This large basin has two islands, old eruptive cones, and its waters are carried to the sea by the Marta. The town of Montefiascone lies at its southern edge enclosed in the half of a crater. It has a splendid view over the blue calm water and its steep green banks and is famous for its wine (*Est Est*), but otherwise it is a narrow, dirty little town. The river Marta flows by the Etruscan town of Toscanella and falls into the sea not far from Corneto Tarquinia, another town of equal antiquity with Toscanella and of a similar character. Corneto also stands above the plain on inaccessible cliffs and is surrounded with an extensive Necropolis in which many painted vaults of distinguished Etruscans have been discovered with funeral accompaniments and domestic utensils. The once powerful community of Tarquinii long waged war upon Rome, but it exercised a far reaching influence on her constitution and religion, especially at the close of the period of the kings. The present town is a medieval place built in the neighbourhood of the ancient Tarquinii, which was abandoned, and is remarkable for its museum containing objects found in the vicinity.

From Corneto a road leads inland to the Ciminian range, whose wooded heights are visible from far off ; it reaches the foot of the heights at Vetralla, also Etruscan, and then goes north to Viterbo. This town, separated by a flat uniform depression from the Bolseno district, still deserves its name as "The Town of Elegant Fountains

and Fair Women," for the fountains are heard splashing everywhere in the quiet streets with their lofty dark houses in Gothic or Renaissance style, and the girls do in fact possess extraordinary beauty, with their regular features and slender graceful figures.

Viterbo was the capital of the *Patrimonium Petri*, a present from the Countess Matilda to the Papal See, and it has harboured in its walls several Popes and Councils. A high-road leads thence through vineyards and gardens to the dark heights once regarded as impenetrable. From the top it gives a peep over the crater of the volcano with the crater lake and the singular eruptive cone of Monte di Vico, and then slowly descends to the hollow of Nepi, reaching Rome eastwards from Lake Bracciano. This route corresponds to a great extent with the Via Cassia, but in the Ciminian district the latter used to run on the west, as there were important strongholds on that side.

The roads of this locality are much incommoded by the deep ravines, some of which have to be avoided by making a circuit, some to be spanned with bridges, and the radiating valleys of the flanks of the volcano of Vico, which abounds in tufa, show this formation in a typical form. On this account the Etruscans planted their rocky fortresses thickly in this region. Nepi, Norchia, Vetralla and Civita Castellana (the ancient Falerii, the capital of the Faliscans) are examples of this and the plan of this last town introduced above (p. 87) may serve as a pattern of these fortresses. At Norchia and Castel d'Asso the sides of these ravines are covered with rock tombs, from which were taken the tufa sarcophagi with reclining figures as large as life on the lids, which are now in the museum of Viterbo.

Not far from Civita Castellana rises the finely shaped limestone rock of Monte Soratte (2,247 ft.), an isolated mass with mesozoic subsoil coming through the tertiaries and the masses of tufa, its slopes grown with olives and chestnuts, and its summit crowned by a monastery. Seen from Rome it stands like an outpost of the Apennines and attracts involuntary notice, especially when in winter time it bears a shining snow cap. But it is only on very cold days that the snow remains, and Horace is right in saying in the well known ode—

*Vides ut alte stet nive candidum Soracte.*

The volcanoes of the Tolfa and of the district of Sabate take up the southern part of ancient Etruria. The former is an eruptive mass of trachyte with exhalations of sulphur and alum mines, in a district void of people, round which flows the Mignone. The second is the site of numerous eruptions (forty-five) of subterranean magma and of the wide basin of the Lago di Bracciano, from the northern edge of which an

aqueduct was carried in ancient times to the part of Rome on the right bank of the Tiber, called the Aqua Trajana, or Alsietina. Among the hills on the south east, sloping towards the Tiber, lay Veii. It was so impregnable upon its mound of tufa that, according to the legend, it was only by a subterranean mine similar to the well of Orvieto that the Romans under Camillus were at length able to overpower this troublesome neighbour. The port for the whole of the valley of the Tiber is Civitavecchia.

To the east of the lower course of the Tiber we come to the wide Roman Campagna, which rises slowly to the Monti Laziali. Brown in summer, it is covered in the spring with variegated flowers and waving grasses, and it is full of deserted roads, arches of ruined aqueducts and rows of tombs. Here and there in the neighbourhood of a farm sheltered by trees graze long-horned white or silver-grey cattle in a railed enclosure, or horses, chiefly black and of a very pure breed, race about at liberty in herds, guarded by wild-looking herdsmen on horseback and savage wolf dogs. At different places large springs rise from under the travertine and tufa, such as the Acque Albule on the way to Tivoli, and the brooks of the Aqua Virgo, one of the ancient aqueducts now restored.

The picture is entirely changed as soon as we reach the foot of the Alban Hills. Figs, olives, oranges and, still more, vines in luxuriant plenty flourish in these lands, which are traversed by numerous radiating channels, large and small. There is no spot in this garden-like land in the long curve from Frascati to Velletri which is not utilized. The plants cling to the outside of the crater ring and cover the slopes of Lakes Alba and Nemi. These are set in the landscape like two blue eyes, and have always been looked upon as the jewels of the soil of Italy. Here the Roman emperors fixed their summer abodes and gave their splendid feasts, for one of which the boat of Caligula, found in Lake Nemi, was used. In the charming Castel Gandolfo, on the Alban Lake, with the commanding view over the Campagna to the sea and the Eternal City, the Popes used to reside when Rome became too hot, and even now the highest families have villas at Frascati, Genzano and elsewhere. The Lago di Albano is bright and clear, but Lake Nemi, sombre and calm, is far lovelier, as the well-wooded central cone of Monte Cavo rises above it (cf. illustration, p. 103). Clinging to the west flank of this mountain is the picturesque, smoky and dirty town of Rocca di Papa, and on its summit is a monastery where once, in a grove of oaks, lay the temple of Jupiter belonging to the Latin Confederation.

The central crater is occupied by moist cornfields and meadows; within it, somewhat out of the centre, stands the eruptive cone of

the last eruption of Monte Pila. Forests, partly splendid chestnuts and partly oaks, predominate on the north side of the mountain and descend in the east as far as opposite Velletri. It is only recently that a railway from Rome to the valley of the Sacco has made the north side more accessible. On this side the rude Tramontana winds prevent the vegetation from flourishing so luxuriantly, so that corn and olives are the most important objects of cultivation, to which in damp localities reeds are added, which are used for supporting vines in the manner described on p. 199. The craters of the Alban Mountains, abounding in water and filled with snow in winter, were, owing to their pure perennial springs, the starting points of several ancient aqueducts, and the rows of arches can be followed for miles along the railway and the Via Appia as far as Rome.

The influence of the Alban Mountains reaches in the form of tufa and ashes, and even, for a short distance, of volcanic lava, into the depression between the Monti Ernici and the Monti Lepini, or in other words, some way into the valley of the Sacco. This longitudinal valley, through which passes the road from Rome to Naples, is occupied by an undulating narrow plain, but the ground is only covered by green fields of wheat, with here and there a farm, or a ruined tower. Otherwise the region is bare of inhabitants, as it is in the hands of large landowners, and the hillsides and elevated plateaux are scantily peopled.

The Monti Lepini were once the place of abode of the Volscians, and the names and buildings remind us of them; for instance, there are remains of Cyclopean walls to be seen at Segni. Posi and other villages lie apparently on the sites of ancient settlements and resemble them in their narrow streets, in their dirt and their impregnable positions. While the Monti Lepini are very steep towards the valley of the Sacco, they slope more gently towards the sea, and then descend into the Pontine Marshes. The rain that falls on the limestone plateau comes to the surface in numerous springs at Cori, Sezze and Terracina, and makes the low land marshy, owing to imperfect drainage.

The Hernican and Sabine Mountains, standing opposite to the Monti Lepini at Tivoli and Alatri, embrace the river system of the Aniene, which runs first in a longitudinal valley till it masters the chain by clearing the last obstacle in the celebrated Falls of Tivoli. Tivoli, a small town in an elevated situation, was in ancient times a richly ornamented city of villas, where Hadrian built his summer residence and adorned it with treasures of art and astonishing landscape pictures. On a cliff above the falls of the Anio, a small round temple, said to have been dedicated to the Sibyl of Tibur, has weathered all the storms of time. At present the water power is utilized for mills

and factories. The danger of floods, to which Tivoli has been repeatedly exposed in consequence of the insufficient outflow, has been temporarily remedied by the works mentioned above (p. 102), but it is difficult to bring about a permanent cure.

Finally, at the centre of the Campagna, and occupying both sides of the Lower Tiber, lies Rome, the Eternal City, once the mistress of the world. After a thousand years of Papal rule she became, in 1871, the capital of United Italy and the seat of government, civil and military. For the protection of this and of the national treasury, the most important military depots, etc., a closed circle of detached forts was commenced twenty years ago. The circle is of large radius, and on the west it commands the Transtiberine heights, and on the east it is pushed out far into the Campagna. The population of Rome in 1891 was in round numbers 436,000 souls, and it is thus only exceeded in number by Naples. The city itself is still surrounded, though not quite without interruption, by the walls of Aurelian, with its numerous towers and gates, which defended it against so many assaults in the Middle Ages, although not against all. The citadel of the Popes was the Castle of St. Angelo, on the right bank of the Tiber, built as a mausoleum of Hadrian; it was connected with the Vatican and served the Pope as a place of refuge when in danger.

The site of the city is hilly and cut by several valleys, and thus there are several eminences more or less separated one from another, giving rise to the name the "City of the Seven Hills." The oldest dwellings have been found on the most isolated of these, the Capitoline and Palatine Hills, originally protected by swamps filled at flood time with water; for on the latter of these the remains of the wall enclosing the *urbs quadrata* are to be found. At the time of Servius Tullius the city extended over hills called the Quirinal, Viminal, Esquiline, Cælian and Aventine, and its centre was the *Forum Romanum*, the low valley at the foot of the Capitol and the Palatine. At present the differences of level, though quite visible, are greatly diminished, as the centuries have worn down the edges of the hills and filled up the depressions with the refuse of the "City of Millions." Everywhere the soil of ancient Rome (*Forum Romanum*, *Forum Trajanum*) is several yards below the present surface, and the columns of ancient buildings are buried in the earth to half or a third of their height. *Mons Janiculus*, lying on the other side of the river, was included in the fortifications as an important *tête de pont*, and when, in the time of the later republic and the first emperors, the old circumvallation became too small, the *Campus Martius*, a flat piece of ground between the Quirinal and the Tiber, and reaching to the Pincian Hill, was built over.

In the Middle Ages the older city, once covered with stately edifices,

was deserted, gardens arose on the Palatine over the vast substructions of the palace of the Cæsars ; the Forum Romanum became a swampy meadow on which cows pastured between the stumps of columns (Campo Vaccino), the Campus Martius sufficed for the diminished population, and the Popes, who had at first resided in the Lateran on the Cælian Hill, changed their abode for the Hill of the Vatican, where the Apostles Peter and Paul are said to have suffered the death of martyrs in Nero's Amphitheatre, and where stood the Castle of St. Angelo, commanding the city.

Gradually, with the increase in the number of souls, the rows of houses have spread again over the Quirinal and the Esquiline, but on the Aventine and Cælian hills there stood only villas and monasteries, until a new and fresh life made its way into the city with the conquest of 1870. The railway ending on the Esquiline near the Baths of Diocletian, created a new quarter, the King took up his abode in the papal palace on the Quirinal, and the representatives of the people at its foot on the low height of Monte Citorio, near the Column of Aurelius. The government and the officials required new buildings, and under this magnificent and unexampled outburst of prosperity arose extensive building speculations, often with disastrous results. These created large new quarters with straight, broad and hot streets and dreary barrack-like residences on the Campus Martius, the Esquiline and the Cælian. In spite of this, the Aventine and large spaces on the Cælian, within the city walls, are not yet built over, being occupied by gardens, kitchen gardens or vineyards. The mighty ruins of the Baths of Caracalla stand in the middle of carefully cultivated fields, where the silence around gives no hint of the neighbourhood of the busy modern city.

Recent authors, the last being Zola, have repeatedly commented on the three strata lying side by side and partly one over the other in the Rome of to-day. The ancient city with the Capitol, Mount Palatine and the Forum in the centre, Papal Rome with the Vatican and the Castle of St. Angelo, and Royal Rome with the Quirinal and Monte Citorio as the focus of contemporary life. The Campus Martius in the curve of the Tiber belongs to all three epochs.

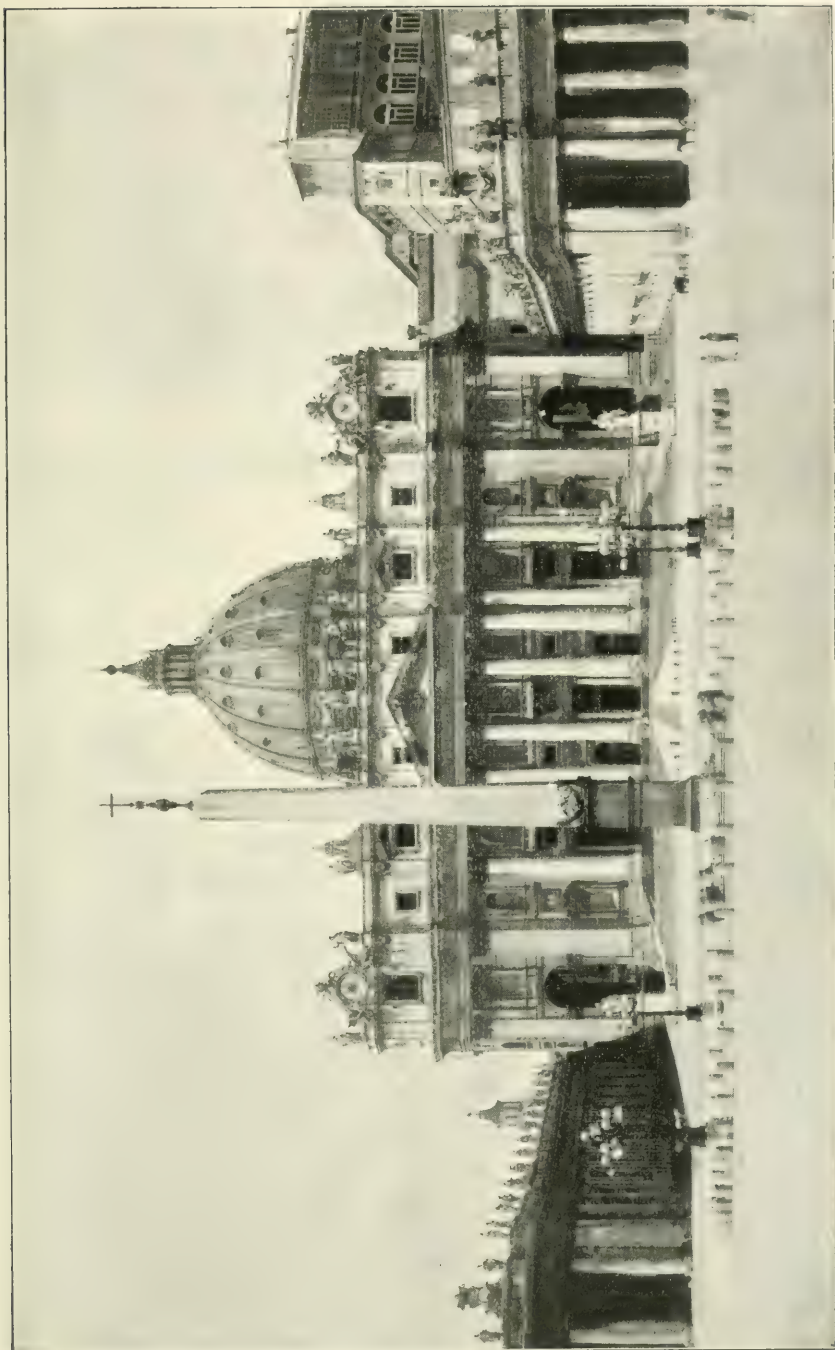
The lower quarters have gained much through the recently completed works regulating the flow of the Tiber. These provided the bed of the river with strong walls to prevent the flood from forcing its way into the cellars and the lower streets. Again, the building speculations caused a number of small crooked streets and passages in the most unhealthy and disreputable parts of the town to be bought up and replaced by rows of modern buildings. The picturesque features of the Eternal City portrayed by travellers of the eighteenth and the first

half of the nineteenth century, exist no longer, or only to a very limited degree. However sorry we may be in the interest of the artist, it cannot be denied that it is only thus that Rome could have become a great city, for its past surroundings were quite incompatible with the requirements of the capital of one of the Great Powers of Europe.

A description of all the sights, the galleries and the churches, etc., does not lie within the scope of this book. We can only touch on the general character of the present city. It has become more and more modernized. The Corso, a straight and not very wide street leading from the Capitol to the Piazza del Popolo, about a mile in length, is the centre of social and political life. Here, during the carnival, used to be the horse races and the flower and confetti throwing. As it adjoins the Piazza Colonna and the Monte Citorio, the deputies, senators and journalists assemble in the cafés at the street corners during the session of Parliament, and politics is the chief subject of conversation. The Corso ends at the Porta del Popolo, where there is an open space adorned with an obelisk. On fine afternoons ladies of quality drive within the walls on Monte Pincio, which has been converted into a pretty park, and outside in the gardens of the Villa Borghese.

From the Corso one goes straight up to the Quirinal, the top of which is connected with the Pincio by the gardens of the Villa Medici, the French School of Art and the Villa Ludovisi. A magnificent flight of steps surmounted by the church Trinita dei Monti, makes it easier to mount from the Piazza di Spagna. Above on the Quirinal and Esquiline are the King's palace with its garden, the Ministries of War and Finance, and the railway which is between the remains of the old wall of Servius and the ruins of the Baths of Diocletian, now converted into a monastery and a museum.

On the other side of the Corso we reach the Tiber through a maze of narrow streets. In this part of the city the Piazza Navona, where a monument has been raised to Giordano Bruno, burnt there in 1600, completes the circumference of Domitian's Stadium. Then in the neighbourhood is the Pantheon, the glorious dome built by Agrippa, now a kind of national sanctum, as it contains the tomb of Raphael, and still more that of Victor Emanuel. The wonderful roof has served as pattern for the countless cupolas of the Renaissance churches, and has survived the sieges and burnings which have passed over Rome. In the small streets of this region is displayed the life of the people. This, if not so loud and noisy as in Naples, is of a far more southern and lively character than in the towns of Northern Italy and Tuscany. It is very interesting to pass through the dark narrow lanes at the western foot of the Capitol, near the Marcellus Theatre,



THE CHURCH OF ST. PETER IN ROME.



and to see the artisans working in the streets and the dense throngs of people and vehicles.

Business life has for a long time been concentrated between this point and St. Angelo, as the names *Banchi Vecchi*, *Banchi Novi*, indicate.

A series of bridges lead over the river, the most ancient and famous being the Bridge of St. Angelo, which crosses the Tiber at the foot of Hadrian's tomb. Over this the Leonine city is reached, the papal quarter of Rome. It is quieter than the rest of the city, and on the wide open place before St. Peter's a deep silence generally prevails, only broken by the splashing of the two fountains and the rumbling of a carriage or two with foreigners. It is only at high Church festivals, when the Holy Father himself celebrates mass in the church, or on the arrival of a train of pilgrims, that the vast space and the columned halls around are thronged. The mighty church of St. Peter's, rising in the background, with its dome visible from a great distance, the emblem of Rome, has been brought to the reader's notice in the accompanying illustration. On the right the Palace of the Vatican adjoins the church; it has many storeys and abundant windows, and contains the renowned collections of antiquities, the picture gallery, the series of rooms painted by Raphael, the Sistine Chapel with the latest work of Michael Angelo, and the Vatican Library. Behind church and palace, the summit of the hill as far as the wall of the fortification of Urban II. is occupied by the Vatican gardens, in which the Pope refreshes himself by walking, as, being a "prisoner," he does not choose to leave the Vatican. North of the Castle of St. Angelo, under Monte Vaticano, a new quarter of the town, with broad rectangular lines of streets, has sprung into existence, but owing to the building crash of recent years has not attained healthy development or been carried out as intended.

Crossing one of the bridges, we arrive, after a short distance, at the ruins of ancient Rome. The Mons Capitolinus is, it is true, covered with buildings, and on one pinnacle it carries the Palazzo Caffarelli, upon the site of the temple of Jupiter, together with the German Embassy, and on the other the sacred old church of Araceli, and between the two, accessible by a flight of steps enclosed in a garden, and by a carriage drive, is a small open space adorned by a statue of Marcus Aurelius. These are flanked right and left by the Palace of the Conservators and the Capitoline Museum, while the background is closed by the Palace of the Senators, where the sittings of the Municipal Council are held. The whole, carried out in accordance with designs by Michael Angelo, makes an uncommonly pleasing impression.

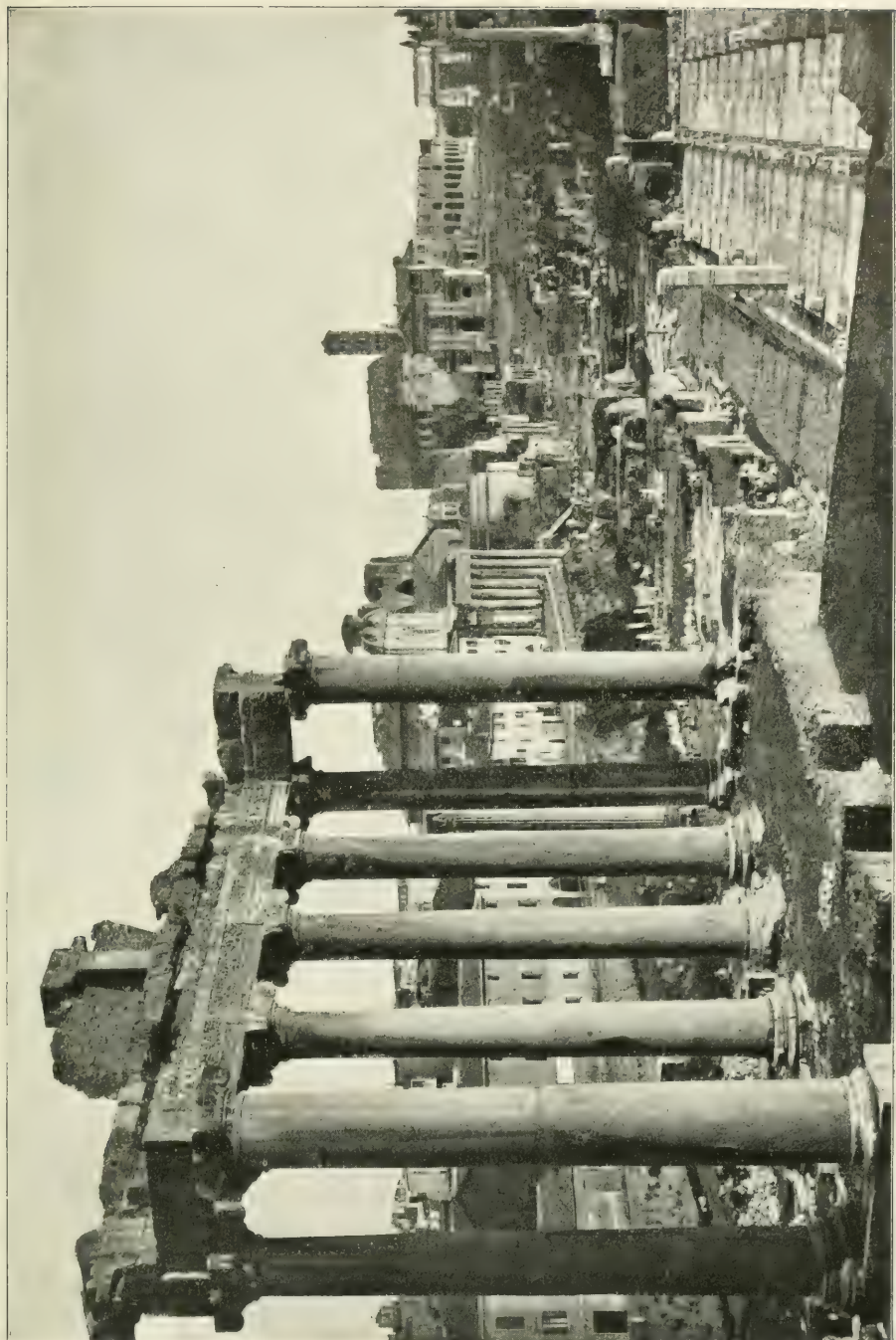
Behind the palace of the Senators, the old Tabularium or Archives,

stretches out to the south-east the Forum Romanum, a field of ruins. Whoever treads this historic soil for the first time is involuntarily struck with awe ; but on coming there again and again, the predominant impression made by this low-lying ground sprinkled with fragments, where, at most, a couple of inquiring foreigners or bored sightseers are wandering about, is that it is a miserable desert. The picturesque charm which adorned the Campo Vaccino before it was excavated is gone. The same holds good of the Palatine, which still possesses interesting portions, only at the side of the Forum and opposite the Circus Maximus, in the depression before the Aventine, where rise the indestructible rows of huge columns, the substructure of the palaces of the Cæsars, or where cypresses and laurels enliven the hillside. Its surface, however interesting its remains may be to a historian, appears only a dreary, hot and dirty waste of rubbish.

At the eastern end of the Forum Romanum, the Velia, stands the Arch of Trajan, excellently preserved, with reliefs representing the Emperor's triumph over the Jews. Then follow the Arch of Constantine, the *Meta sudans*, and the magnificent ruins of the *Amphitheatrum Flavium* or the Coliseo. It is the most colossal building of ancient Rome, and could hold 8,700 spectators. Although it has long served as a stone quarry, and only less than half remains, it still makes an overpowering impression, especially by moonlight, when deep black shadows alternate with brighter portions and disturbing details disappear. Of the splendid *Forum Trajani*, *Forum Augusti*, *Forum Nervæ*, and *Forum Julii*, to the north of the *Forum Romanum*, only small remains are visible, such as the Column of Trajan and the base-ment of a neighbouring portico, or the half-dug-out wall of the *Forum Nervæ*, as the Via Alessandria and the streets running out of it have been built above the débris.

In the neighbourhood of the Forum of Trajan is the end of a broad, quite modern street, the Via Nazionale, leading from the railway station to the commencement of the Corso, at the further end of which, from the Basilica Sta. Maria Maggiore and along the railway line, a new quarter has arisen. Twenty years ago the Esquiline and the Cælian Hills were, for the most part, arable land or gardens, where the two basilicas of Sta. Croce in Gerusalemme and San Giovanni in Laterano, with the adjoining palace and museum, stood completely alone near the city wall. In the Church of the Lateran many German kings were crowned as emperors by the Pope ; and being one of the oldest places of worship—said indeed to have been founded by Constantine—it bears the title of “ Mother and Head of all the Churches in the City and the World.”

It is only the Aventine that has not as yet fallen a victim to the



THE ROMAN FORUM.



fever for building. In front of it, near the Tiber, and on the way to Ostia, we notice a low, peculiar green hill enclosed by houses. This is the Monte Testaccio, which has grown up in the course of centuries out of the rubbish of the ancient City of Millions.

The neighbourhood of the city also offers much that is worthy of attention. In the north the Via Cassia passes over the *Pons Milvius* (*Ponte Molle*) at a distance of about two miles and a half. Here Constantine made a furious attack on the troops of the rival Cæsar Maxentius, and drove them into the Tiber. This rapid victory opened the way to Rome, but still more, it brought about the recognition of Christianity, as Constantine believed that he had been victorious by the help of the God of the Christians. A little lower down the river, on the opposite side, rises Monte Maria, with the Villa Madama and the extensive goat-raising establishment before the gates of the Vatican. Manufactories of all kinds have been set up below the city, and they are rapidly growing, owing to the increasing demand in Rome. The seaport town of Ostia was completely choked with sand in the course of time, and the shipping trade became extinct in consequence, going partly to Porto d'Anzio and Palo, but more to Civitavecchia. Plans have often been put forward for making Rome a port by means of a ship canal; but for the time they have little prospect of being realized.

On the Via Appia, south-east of Rome, leading to Southern Italy, there stand in a long row the remains of what were once splendid tombs. The best known is the huge tower with the grave of Cæcilia Metella, which served in the Middle Ages as part of a fort. The lava from the Alban Mountains, easily to be recognized by the shape of the long, flat narrow ridges, flowed down close to this point, and extensive quarries of this supply the material used for paving the city. The volcanic tufa on both sides of the road facilitated the construction of extensive subterranean cemeteries, the dead being deposited in cells under the earth. The Catacombs of St. Callistus, of Nereus and Achilles, and of St. Sebastian are south, the Hebrew tombs of the same age are north of the Via Appia. They form a labyrinth of narrow passages, with many stories, excavated in the tufa, and have given us much information as to the art, as well as the intellectual and domestic life of the early Christian communities.

In the Campagna, to the north of Rome, stood the towns of Fidenæ and Gabii; and within a curve of the Tiber is the Mons Sacer, to which the Plebeians migrated when they could not obtain from the Patricians the right to a share in the government of the city, which they considered their due.

## 10. THE ABRUZZI AND MOLISE

The Abruzzi are the interior highlands round the Fucine Lake and at the Gran Sasso d'Italia. Molise is the adjoining region of Campobasso. United they formed the northern province of the Kingdom of the Two Sicilies. Thus this division of the country reaches from the Sabine and Hernican Mountains to the Adriatic, and embraces all the mountainous country lying between the Tronto and the Fortore.

It is a rude and wooded district, with isolated plateaux. It is traversed by several parallel chains and longitudinal valleys, the height culminating in the Gran Sasso, and the slope towards the sea constituting the Adriatic coastland.

Basins with no natural outlet, such as the Fucine Lake, and longitudinal valleys, such as that of the Upper Salto and the Liri, are replaced in the southern section and on the eastern side by transverse channels, the range, with scarcely any exception, being drained into the Adriatic, in spite of the high boundary chain. The Pescara, the largest of these rivers, which carries off the waters of the central plateau, cuts its way through the chain of Monte Morrone, and enters the lower country between Gran Sasso and Majella. The district of Campobasso, with the Sangro, the Trigno, the Biferno and the Fortore, has smaller heights, and the chain shape is less sharply expressed, for here the Apennines begin their divergence to the southwest, and the huge plateau-like limestone hills, such as Monte Matese, the region where the Biferno rises, begin to prevail. For the rest, the rivers Liri and Volturno, both Campanian for the greater part of their course, take their rise in the western part of the Abruzzi. The water of the Fucine Lake is carried off into the Liri by a tunnel.

As in the other provinces, the eastern slope produces oil, wine, flax and hemp. Molise, too, may on the whole be called productive, having often very good soil in its valleys. The elevated plateau, however, is a poor country, where southern fruits, even grapes and olives, are not ordinarily found, and corn only in the lower portions. Rye, and still more oats, are the chief objects of cultivation, and these only under difficulties. There are meadows and pastures where asses, mules, cattle, and smaller livestock are raised, and the export of these forms the chief source of support to the inhabitants. Hides, fiddle-strings, wool and charcoal come also from the Abruzzi, while manufactured goods, with the exception of a few cloths and carpetings woven at home, are entirely wanting.

Under such conditions it is easy to understand the uninterrupted emigration into other provinces, into Campania and Rome, or abroad over the sea. The inhabitants are considered uncivilized, boorish

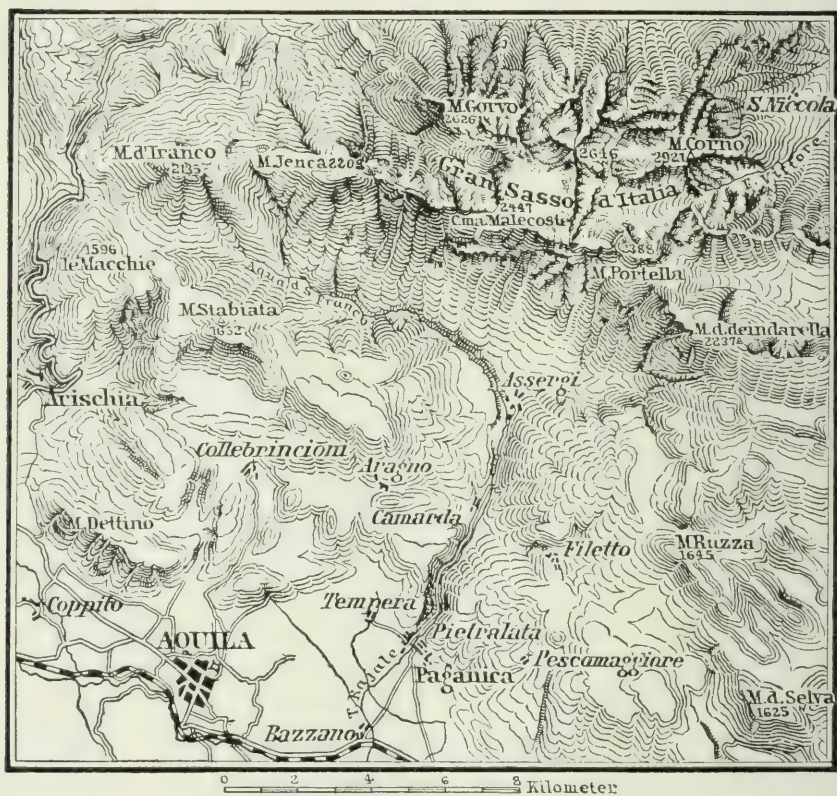
and savage ; they can seldom read and write, and in the mountains they keep to their costume of a short jacket, with straps round the calves, and sandals cut out of a single piece of leather. In former times the free life of the shepherds and charcoal burners often led them to resort to brigandage, as the country was not traversed by roads, and abounded in subterranean caverns, which offered excellent hiding-places. By laying down roads, by constructing railways—those from Rome to Solmona, viâ Tivoli, and from Benevento to Campobasso and the sea along the Aterno and the Pescara—the country has been gradually opened up ; then the draining of the Fucine Lake has made that wide basin habitable, and a number of attempts have been made to utilize the water power, so that conditions have undoubtedly improved in many directions during the last thirty years.

This territory has taken less part in the history of the world than the other provinces of Italy. In ancient times it was inhabited by Æquians, Marsians, Frentanians and Pentrians, partly Samnite tribes, whom the Romans had much trouble in subduing in three wars. These powerful and warlike mountaineers had formerly overthrown the Etruscan rule in Campania, and had threatened the Greek colonies on the Tyrrhenian coast. At present the southern part of ancient Samnium falls partly to the mountainous part of Campania, partly to the Basilicata. The main road, the Via Valeria, runs from Rome, viâ Tivoli, to the Fucine Lake, then past Mons Imeus (Monte Sirente) to the valley of Pescara. From the Middle Ages the battle of Tagliacozzo chiefly deserves mention, as the House of Anjou was victorious, and with the capture of Conradin the rule of the Hohenstaufen came finally to an end, and German kings ceased to rule over Southern Italy and Sicily.

The northern section of the Abruzzi consists of the following chains and valleys, going from west to east : (1) The Hernican Mountains ; (2) the Valley of the Liri, utilized by the road from Aquila to Naples ; (3) the chain of the Monte Cornacchia ; (4) the longitudinal valley of the Upper Salto and the tributaries of the Fucine Lake. This valley intervenes between the chain of Monte Velino (8,159 ft.), and its southern continuation, Monte Terrata (7,224 ft.) ; (5) chain of Monte Sirente, crossed by the line from Rome to Solmona, with many curves and tunnels ; (6) longitudinal Valley of the Aterno, with Aquila and Solmona at the ends ; (7) spurs of the Gran Sasso and the chain of Monte Morone, with the transverse Valley of the Pescara ; (8) Gran Sasso d'Italia and Majella, both somewhat outside the configuration of the range ; (9) Adriatic coastland, with Teramo and Chiete.

Aquila, founded by Frederic II, who hoped by it to keep the

Pope in check, soon rose against the Hohenstaufen, and it remained independent till the Spanish period. In the sixteenth century the inhabitants were visited by famine and pestilence. The city has a splendid view of the Gran Sasso lying beyond the Valley of the Aterno; it contains a castle of Charles V, and exports wood and live stock, besides manufacturing leather and paper. In a hollow at the other end of the valley lies Solmona, the home of the poet Ovid, who



SKETCH MAP OF THE GRAN SASSO D'ITALIA.

celebrated its cool springs and its fertility, both of which the neighbourhood keeps to the present day. The Gran Sasso (in Monte Corno, 9,673 ft.) constitutes a mighty fold, cut off abruptly on the south by a dislocation amounting to over 3,000 feet. It lies on the edge of the fault and is composed of Mesozoic limestones, with Tertiary strata higher up, on the slope towards Teramo. Seen from Aquila, the serrated ridge, with its mantle of snow lasting into the summer, and its grey walls of Triassic dolomite, produces quite an alpine

effect. Along the main ridge is a sunken trough, the Campo Pericoli, in which the snow collects, and the bottom of which, like many other places on the plateau, is perforated by numerous holes. The Gran Sasso has of recent years been frequently ascended by members of the Italian Alpine Club, and the view over a large part of Central Italy is said to be unique.

The mass of Majella, with Monte Amaro (9,153 ft.) south of the ravine of Pescara, has quite a different appearance. This portion of the range is essentially composed of Tertiary strata, with a gentle slope towards the east, and steep descent on the west, down to the Valley of Caramanico, formed by two cleavages. The scanty vegetation principally consisting of grasses, and affording only pasture, gives this mountain a somewhat monotonous look. It is not till we get down to Chieti that the land becomes more fertile and, consequently, better cultivated. Chieti is the seat of a prefecture, and stands on a hill above the Pescara, with views as far as the sea and over the Majella group. Besides the government buildings and the schools, there are small manufactories of silk, violin strings, wax and hats; and the country people come together there for a market six times in the year. Teramo stands at the foot of Majella, as Chieti does at that of the Gran Sasso. It is the chief town of a province of the same name, and is of importance as a market town for the neighbourhood. The country north of the Pescara is called Abruzzo Ulteriore, that to the south Abruzzo Citeriore.

Molise is adjacent on the south. As the limestone cliffs in the Apennines between the Adriatic and Campobasso give place to softer rocks of clay or marl, the valleys spread out, the slopes become flatter, but the soil becomes at the same time more difficult to cultivate, and the danger of inundation greater. The vineyards and olive groves of the Adriatic coast change inland into ploughed fields and stony pastures, so that this section of the range already resembles the Apennines of Benevento and Ariano di Puglia. In this region lies Campobasso, remarkable for its steel, the excellence of which depends on the use of charcoal, as is the case of Swedish steel.

Still further inward we come to Monte Matese (6,726 ft.), a broad chain of plateau-like character, with beautiful beech woods on the summit, and many plentiful springs at the foot. These last feed the Biferno on one side and the Volturno on the other; the Campanian side driving the machines of the spinning mills of Piedimonte-Alise. At the northern foot of Monte Matese, on a hill near the Upper Volturno, rises the confined and dirty town of Isernia, the ancient Æsernia, to which a railway from Campania is now open, to be continued later to the Valley of the Tiferno.

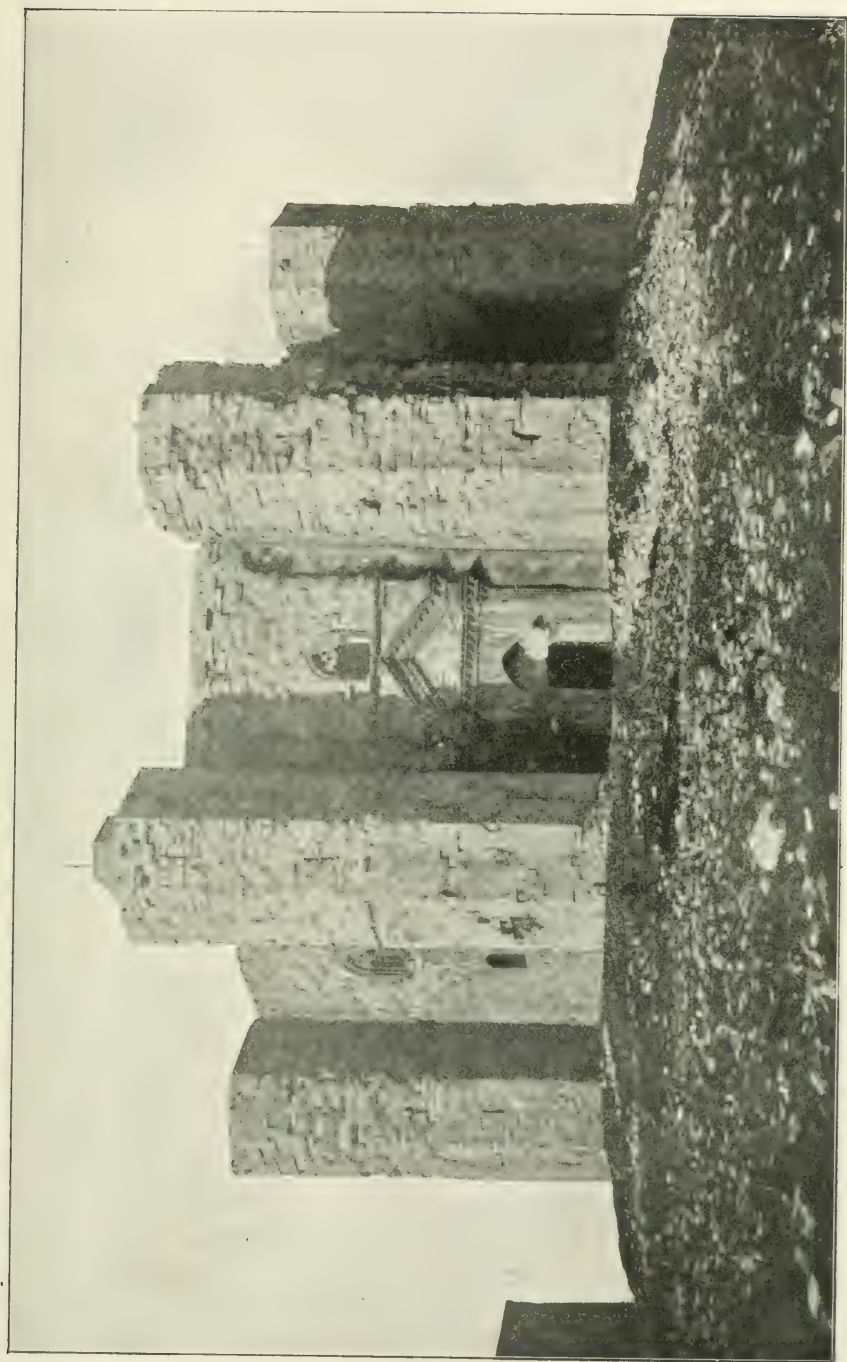
## II. APULIA

The flatter country along the east side of the Apennines, from the Fortore to the Gulf of Taranto, including the peninsula of Ofanto, is called *Le Puglie*, its northern section being the Roman Apulia. To this belongs also the promontory of Monte Gargano and, as regards government, the Tremiti Isles in the Adriatic. The soil is in general flat, sometimes so level that in the northern part it has received the name of *Tavoliere di Puglia*. Under the forty-first parallel the slow upheaval of the Mesozoic limestones under their covering of Tertiaries causes the land to rise to the height of 2,230 feet. This forms the hills called the Murgie; they are bounded by the longitudinal valleys of the Basentiello and the Lower Bradano, which also separate Apulia from the Basilicata. The peninsula of Ofanto is a low tableland without any definite river system, and it descends to the Adria with many different kinds of slope. The geological connexion of this district and that of Gargano with the Dalmatian limestone plateau has been discussed in detail above.

In ancient times this land was inhabited by the Daunians, Peuce-tians and Messapians, the last being from the north of Greece and allied to the Epirots. The peninsula was called Calabria, a name which was transferred to the other and longer Italian promontory. The Via Appia on the west, and the Via Trajana by the sea, traversed the district, and the two ended in Brundisium (Brindisi), the most important port for crossing to Greece. The present population contains some Albanian and Greek elements; beside trade and fishing, it is engaged exclusively in agriculture and stock raising. It is, however, very unequally distributed; as certain portions, such as the Tavoliere or the western slopes of the Murgie, where large grazing farms prevail, appear empty of people and have proportionately fewer townships than the seashore, along which there is a considerable number of busy seaport towns.

Apulia was famous as a land of wheat and pasture in ancient times. This holds good to the present time, as splendid, boundless cornfields cover the ground, which, green in winter and already yellow in spring, is bare, brown and parched with the heat and terribly dusty at mid-summer. Up towards the Apennines meadows predominate; here horses and cattle are raised in extensive holdings, and here is produced also the cheese called "Provolone." The Murgie are clothed with vineyards and luxuriant olive plantations, and in appearance form a long greyish-green ridge of hills.

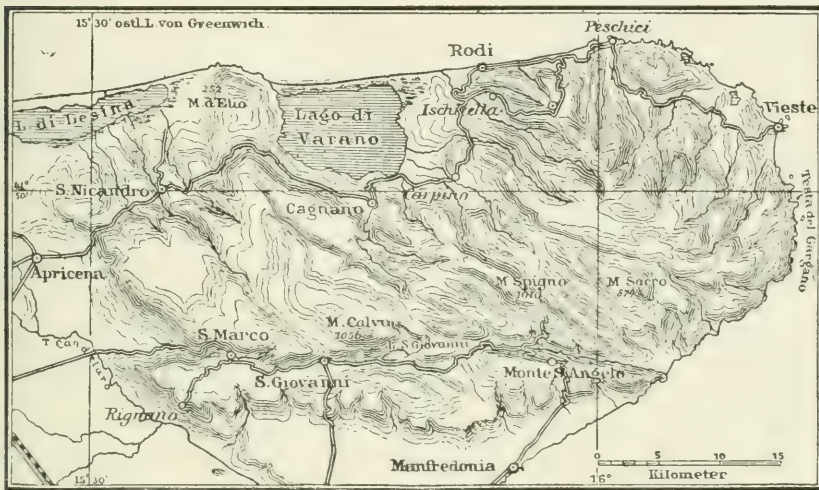
The rest of the plateau has a southern vegetation here and there where the *terra rossa*, three feet or more thick, occurs; elsewhere it



CASTEL DEL MONTE IN APULIA.



has only scanty grasses, thistles and other plants which can withstand drought ; for want of water is the chief plague of Apulia. If there were more moisture in the soil, from which all the water flows away owing to its surface of clay, or is swallowed up by doline and subterranean fissures, if there were a possibility of irrigating it during the summer and first half of the autumn, this country would be one of the most favoured in Europe and might vie with Campania. As it is, however, there is but one harvest in the year, and during the summer months it all lies fallow. For this reason the plan spoken of before has been started, to collect the winter and autumn rain of the Ofanto Valley and to bring it to the thirsty fields as required in the rainless



SKETCH MAP OF MONTE GARGANO.

summer. Unfortunately the capital for this gigantic undertaking is not forthcoming.

In the Tavoliere there is a still greater difficulty. Under the vegetable mould and the stratum of disintegration, from three to five feet thick, in the undulating deposits of rock there is a hard bank of limestone, impenetrable by the roots of trees, and hence it comes that through the length and breadth of the district there is no tree to be seen, there is an entire absence of vines and olives, and wide stretches of country can only be utilized for pasture.

South of Gargano the land near the Gulf of Manfredonia is marshy and unhealthy. The brooks that come down from the spurs of the Apennines either drain into the soil or collect in moist depressions. The land north of the Murgie is overflowed every year by the Ofanto,

and the inundation leaves it a tenacious mud. The whole curve from Gargano to the mouth of this river is destitute of habitations and much of it is waste land ; on the shore itself salt pans have been laid down.

Finally, the climate of Apulia is condemned as specially unpleasant from its violent contrasts. For while the north and north-east winds blow freely over the sea in winter and produce a cold unexampled in a district so far south, and in spring there are often cold spells with heavy falls of snow, the heat in summer overpowers everything, and in autumn the land is visited with most violent storms of rain.

Monte Gargano is an isolated mass of Jurassic and cretaceous limestones. They are compressed into a flat fold, the strata running E.N.E. and W.S.W. and thus parallel to the Dalmatian islands of Curzola and Lissa. The whole mass seems to be tilted up at its southern edge which descends more abruptly towards Manfredonia. Monte Angelo being near to the highest point, Monte Calvo (3,464 feet), while it slopes more gently towards the sea, its foot embracing the lagoons of Lesina and Varano. The "Pietre Nere" at the shore at Lesina, and the Tremiti islands, may indicate the remains of another similar mass. In consequence of this structure Gargano is often devastated by earthquakes, the central point being often at the line of cleavage out at sea. While the highest summit is pasture land bare of trees, there are dense forests of beech and oak lower down reaching from this to the sea near Vico, until at the edge of these the cultivated land begins

with the well-known line of olives. It is interesting that the land snails, especially the nocturnal molluscs living in the moss, the *Clausilia* and their allies, for example, are different from the forms found in the Apennines, and point to an origin on the opposite coast of the Adriatic.

Monte St. Angelo, where St Michael, who frequently recurs as a patron saint in Southern Italy, is worshipped, is a place of pilgrimage, with a cavern like the Rosalia grotto on the Pellegrino at



SKETCH MAP OF THE TREMITI ISLES.  
They are the remains of a sunken ridge of limestone stretching N.E.-S.W.

Palermo and the smaller shrines on the Campanian mountain tops. Manfredonia, protected from the cold winter north wind by Monte Gargano, is remarkable for its luxuriant vegetation and garden-like surroundings. It is a medieval city, taking its name from Manfred its founder.

The island group of the Tremiti has the form of a rounded rhombus and contains four islands. The largest, San Domino, is 460 acres in extent and 380 feet high; the others are smaller, San Nicola (100 acres, 246 feet high), Caprara (120 acres, 174 feet high), and the rock of Il Cretaccio lying in the middle ( $5\frac{1}{2}$  acres). They consist of chalk and Tertiary limestones, they are irregular in outline and full of bays, the coasts are steep and have numerous caves, washed out by the breakers. St. Domino is chiefly occupied by a dense pine forest (*Pinus halepensis*), within which lie single homesteads with arable land. On San Nicola stands a small town enclosed by an ancient fortification. There may be some thousand people on the Tremiti. Somewhat further out at sea is the rock of Pianosa, thirty-four acres in extent and only thirty feet high. The island of Pelagosa, lying in the middle of the Adriatic with the neighbouring rocks called Cajole, is uninhabited and barren. It belonged to no one till 1873, when Austria annexed it and erected a lighthouse on it.

Lucera and Troja, on the edge of the Apennines, possess interesting medieval buildings, the one a church with ancient doors of bronze, the other a fort of the Hohenstaufen. At Foggia in the Tavoliere the Adriatic railway crosses that from Beneventum over the Apennines along the Cervaro. The city has a prefecture; it is the chief market for corn, wool and live stock from the neighbourhood, and carries on a trade with places far within the range of mountains in colonial wares, salt fish and other necessities of life. Even under the Hohenstaufen Foggia was of the same importance, later on it was the seat of a captain-general in command of the neighbouring district, which in consequence received the name of the Capitanata. Since the opening of the railway, however, a new start in trade and manufacture has become noticeable. The subterranean silos in Foggia for the storing of grain are remarkable. These are a kind of underground granary from which the grain is measured or weighed out at the time of sale.

Cerignola is a similar country town somewhat further south, where seventeen roads and lanes coming from all sides meet together. Cornfields and stately homesteads standing alone determine the character of the neighbourhood, and the houses stand out from afar in the plain like churches. South of the Ofanto, which winds with many curves to the sea, stands Canosa, a Roman settlement, from the tombs of which a quantity of vases have been taken, many being now in the

museum of Naples. In the neighbourhood is the battlefield of Cannae, where in 216 B.C. Hannibal won so decided a victory over the Romans that the whole of Southern Italy fell into his power and he was able to threaten Rome herself.

Then begin the heights of the Murgie, both sides set with small towns containing many memorials of the Norman and the Hohenstaufen periods. Minervino, Spinazzola, Gravina, Gioja del Colle, Matera and Altamura are the most important. At present only quiet, narrow and dirty country towns, they produce wine and oil of the best quality. Near the highest point of the limestone plateau, far from any large town and therefore seldom visited, lies the Castel del Monte, a castle of the Hohenstaufen, an imposing pentagonal block of which we gave an illustration above (p. 87) as an example of a medieval fortress. The Castello di Lucera is a similar construction, and a third is above Lago Pesole in the Basilicata, south of Melfi, where Frederick II is said to have died. The castle and its thick turrets, externally almost without windows, standing on a bare hill and visible afar off, dark and inaccessible, make a solemn and mournful impression.

The Murgie have only recently received a railway, but for the disposal of their produce they want still better means of communication, especially a network of tramways, for which the foundations are scarcely yet laid in Apulia, on account of the thinly scattered rustic population and the absence of manufactures.

Harbours, beginning with Barletta and ending with Brindisi, are ranged closely together along the coast. An unsatisfactory anchorage, a want of protected bays, and the continual threat of being blocked with sand are common to all of them. The want of good and plentiful drinking water from which they suffer in summer makes them unhealthy and dirty, so that they really want to have the Ofanto brought to them for their "bonification." Wine, oil, tartar, hemp, fruit, leather and cheese are the exports; fish, colonial goods, sulphur and cotton the chief articles of import. The coast lands, like Southern Italy, were chiefly under Byzantine supremacy after the fall of the Roman Empire, and the ports carried on trade with the Orient. Then followed a period when Greeks and Saracens contended for Apulia, the German emperors occasionally striking in, till at last the Normans brought peace, and under them and the Hohenstaufen the Crusades began a period of prosperity. The Spanish and Bourbon governments did something, but not very much, for the security of the harbours.

Barletta, the most northern of the series, is a beautifully placed and busy town which has recently gained sad notoriety from its finances having fallen into complete disorder. Then comes Trani, with a Romanesque cathedral; it counts among its inhabitants many

Greeks and Jews. Biscaglie and Molfetta are about the same size, Giovinazzo somewhat smaller. The chief town is Bari, an ancient foundation on a peninsula of limited extent with harbours on both sides. The ancient city is surrounded with walls and, as these were not extensive enough, a new town has sprung up on the adjacent mainland, which renders them no longer of importance. The Basilica of San Nicola, which was erected by Roger I above an older crypt, is far renowned.

Many foreign merchants are resident in Bari—Germans, Swiss, Englishmen and Greeks—and carry on a considerable part of the exchange of goods. The neighbourhood of the town is remarkable for its olive and orange gardens, which extend for miles. Inland towards the Murge, we ought to name Corato, Ruvo and Terlizzi as country towns and places where fine antique vases have been found. Southward from Bari the Apulian plateau reaches the sea at Monopoli: it contains, besides natural grottoes, ancient rock tombs and many kinds of prehistoric weapons and articles of pottery.

The Bari and Taranto railway crosses the elevated plain and marks the limit of the Ofanto peninsula, stony dry fields beginning there and extending to the Capo di Leuca. The upper surface has the appearance of a tableland gently undulating with troughs and uplands sloping in terraces to both seas, but breaks off abruptly in a precipice of 240 to 300 feet in height between Otranto and Sta. Maria di Leuca. The sea has eaten away large caverns in the limestone banks, many of which now lie above the sea and contain sulphur springs, while others are filled by the waves and remind us of the blue grotto of Capri.

The higher parts of the tableland are a stony and barren desert (*Puglia di pietre*), the troughs are covered with luxuriant vegetation which never quite dies down, so that there, as in Sicily, one can speak of an eternal spring. This especially holds good of the deep furrows near the Ionian Sea. Cotton is planted here as in the moist hot stretches of the Basilicata or at the foot of Gargano. Many strips of coast on the Ionian Sea near Gallipoli are marshy and unhealthy or used at best as rice-fields, others again suffer from loose sand, which is heaped up into dunes of fifteen to twenty-five feet high, and is blown inland so as to stop up the water channels and extend the marshes.

The northern section and the shore between Tarentum and Gallipoli have a relatively scanty population and are poor in townships, while there are many more in the south, where they are arrayed along the fertile depressions.

Of towns, Brindisi must be first mentioned as being an important harbour. The sea forms a bay tolerably enclosed, but exposed to being blocked with sand owing to the coast current; one part of the

ancient harbour which surrounded the town to the north is already filled with mud and is, like the flat land of the neighbourhood, a hotbed of fevers. Brindisi served as a starting point for voyages to the East both in ancient times and in the later Middle Ages. At present it is the terminus of the continental part of the post route to India, and since the opening of the Suez Canal it has again become important. The capital of the province is Lecce, the residence of the prefect, and formerly a Norman fortress. Gallipoli serves as a port for the Ionian Sea, especially in the export of oil. It lies on a peninsula and has two anchorages. The coast from Otranto to Leuca bears on its cliffs and rocks sometimes antique columns, sometimes Norman or Spanish watch towers, and sometimes look-out towers for tunny fishing.

Where the peninsula joins the body of Italy the Ionian Sea makes a deep inroad into the land and forms the excellent harbour of Tarentum (Taranto). The city, founded on a rock and surrounded by the sea, was one of the most important Greek colonies in Southern Italy. Thence civilization was spread among the peoples of Apulia and Lucania by means of trade intercourse, which for the most part ramified in the interior. The colony became rich and powerful and maintained a celebrated establishment for raising horses on the neighbouring plateau. In spite of the victories of Pyrrhus, who was summoned to her support, she had to submit to the Romans after a long struggle; but even after the ravages of war was still a flourishing community at the time of the Second Punic War. At present Tarentum is a naval port and station of the fleet, with extensive wharves, docks, arsenals; it is also a port for the exports of the fertile country inland, and is the single important place of trade in the whole gulf. Fishing is actively carried on, for the edible mussels (*cozzole di Taranto*) are considered as the best in Southern Italy, and the byssus of the pinna is used for making a fine durable web; the fish of the gulf are used for food on fast days by the inhabitants of the mountains, to whom they go by thousands of tons.

## 12. BASILICATA

The Basilicata is one of the largest provinces of the country, and is a single prefecture with Potenza as capital. But as it consists either of rough and unproductive mountain land or, as by the Ionian Sea, of marshy pastures, it is one of the least thickly populated portions and has every year an extraordinarily long list of emigrants to show.

Topographically, the Basilicata may be described as the district of the rivers flowing from the Apennines to the Gulf of Tarentum; for the Basentiello, the Bradano with the Basento, the Cavone, the Agri and the Sinni have the whole of their course in this province, and the

watershed dividing them from the Tyrrhenian rivers is its boundary. Only the south-western corner near Lauria touches that sea for a short distance, in a wild mountain region without harbours. There is an entire absence of plains, the only flat parts being small plateaux, somewhat spreading valley bottoms and some stretches of seashore. The higher chains of the Apennines occupy the west and slowly slope to the east, so that the Bradano runs between spurs of the mountains, and the Basentiello in the flat trough between these and the Murgie.

The heights consist of mighty masses and long ridges of limestone round which lies a mantle of clay and marl. Thus the summits are covered with forest or brushwood, and are used for pasture or for burning charcoal. In high positions the snow lasts till April. The sides of the chains indeed have corn (rye and oats), but the heavy glutinous soil offers many drawbacks and often it has to be turned up with a hoe. Besides this, the violent spring rains occasionally wash all the seeds down the hill sides or tear broad furrows in the fields.

Cotton, vines and oil are raised at the south-eastern edge, but the chief region for the two last is Monte Vulture near Melfi in the north-east of the Basilicata. There the extraordinarily fertile basaltic tufa gives a garden-like appearance to the region, over which in front of the range proper rise the isolated ruins of a crater, with its seven pinnacles of rock and its chasm filled with silent oak forests and two small lakes. This section recalls Southern Etruria or the Phlegræan Fields near Naples, approaching the latter in fertility. But the territory of Melfi, and especially the northern half of the province, is frequently visited by severe earthquakes, which have repeatedly laid Melfi in ruins and in other places have injured thousands of people. (Cf. map, p. 67.)

The population is backward. The manners and customs seem often to be the same as in ancient times; reading and writing are but little spread among the lonely mountain hamlets. Every town has its peculiar dress or custom, a sign of the way in which the people live shut off in their rocky nests. It is only recently that there have been any roads, and the railway from Naples to Metapontum and Tarentum was for a long time the only one in the province, the uneven ground and small productiveness giving but little promise of remuneration for the construction of another line. Since 1890 a second railway has been made from Foggia to Potenza via Melfi, and a third from Avellino to Foggia, in the valley of the Ofanto.

As to their origin we have here the remains of the Lucanians, after whom the country was in ancient times called Lucania. Beside the Gulf of Tarentum, they must have received an admixture of Greek blood; Albanians who had been driven out by the Turks were settled in Melfi, Barile, Rionero and a few other towns after 1478, and

they kept up their own religious rites until 1627. The ancient Lucanians had wider territories to the north embracing the southern part of what is now Campania, the district called Cilento, as far as the Sele. There stood the flourishing Greek colonies of Posidonia and Elea (Pæstum and Velia) on sites which have now become desert. On the whole there is not much left of the ancient towns. Cyclopean walls are found at Buccino on the slope over the Sele valley, which are said to have belonged to the little-known city of Numistro. On Monte Vulture, on the other hand, the towns mentioned by Horace in his poems, Venusia, Acherontia, Bantia and Forentum may still be recognized in Venosa, Acerenza, Banzi and Forenza. Venusia was a flourishing Roman colony on the Appian Way, built on a spur of the mountains at the junction of two streams. It must have possessed an important Jewish community at a later time, as rock tombs with Hebrew inscriptions occur in this neighbourhood. Acherontia stands high up, on a hill planted with vines; it is the see of an archbishop and has a cathedral crowned with a golden dome that can be seen from a great distance.

Only a few columns of a temple and the remains of a theatre bear evidence of the Greek city of Metapontum. It was on the Ionian Sea, in the deserted land near the junction of the railways to Naples and Reggio. Of Heraclea scarcely even ruins remain. In the Middle Ages Forenza was a favourite residence of the Hohenstaufen. Melfi, on a secondary crater of Monte Vulture, has some importance as a fortress, being difficult of access; Barile and Rapolla were also mountain fastnesses protected by deep gullies, and in their neighbourhood stood the above mentioned fort of Lagopesole commanding the pass over the Apennines. The flourishing time of Città di Salviano falls within this period. It stood on the ridge between Platano and Agri, but is now entirely deserted, and only a circle of wall and some towers remind us that it once ruled the region for a great distance round.

Potenza, the capital of the province since the time of the Bourbons, was also an ancient settlement. It is on a plateau above the Basento, and looks a dirty and poor town; there are no manufactures and the municipal rates are extraordinarily high. On market days the country people, shepherds, peasants, etc., flock into the town and there is a busy and variegated crowd with all possible costumes in the narrow lanes and small open spaces. There is a peculiar spectacle to be seen in the villages of the Basilicata and even in Melfi when, at the approach of twilight in the evening, the herds of cattle collect from all sides and the animals as quickly as possible seek out their own stalls in the half-darkened streets.

A small fertile plain spreads out in the upper Valley of the Agri. On its eastern side is Viggiano, whose inhabitants gain their living as wandering musicians. The villages of Montescaglioso, Ferrandina, Pisticci and Bernalda, scattered through the south-east of the province, have plantations of cotton. The town of Savoia received its name in 1860 at the time of the enthusiasm for Victor Emmanuel, having previously been called Salvia. In the time of the Spaniards and Bourbons the Basilicata was one of the regions where brigandage could not be rooted out. There are, indeed, secret societies still, but they are kept in check by the Carabinieri distributed over the country, so that at the present time there is no danger either to person or property.

### 13. CAMPANIA

The name Campania, which was originally confined to the flat country on both sides of the Sorrentine chain to the commencement of the Apennines, now embraces the hill country of Cilento, the region where the rivers Sele, Sabato, Calore and Ufita rise, as far as the watershed on the east, the whole middle course of the Volturno and the lower course of the Liri or Garigliano. In its lower portions Campania has unlimited fertility, which has brought it the name of "Felix." Covered with volcanic tufa and broken up into a number of divisions of small extent, it is subjected to the most minute culture, and looks like a gigantic well cultivated garden at all times of the year. We meet with fountains and irrigation trenches everywhere, from which the necessary moisture is conveyed to the plants every evening in the hot season of the year by means of pumps and buckets, worked either by men or asses.

The Campanian Apennines consist of mighty fragments of limestone compressed into chains in more or less steep positions, and with numerous faults between the single blocks caused by the nature of the fields of depression at the edge, and the rocks left between them. Further within the range we have configuration and conditions similar to those in the Abruzzi and the Basilicata, between which and Eastern Campania the province of Beneventum is interposed as a connecting link. There is the same arrangement of rocks, namely, Triassic limestone merging into chalk in the west, and Eocene marl and clay, with slopes subject to landslips, and scanty ploughland near the watershed in the east. Besides this, the highlands of Beneventum and Ariano are characterised by normal undulations of down and valley, while wide depressions or broad furrows filled with volcanic ashes, together with isolated limestone plateaux and broken hills are peculiar to the western section. To this section belong the

mountains of Formia between the sea and the Garigliano, the system of Monte Massico between this river and the Campanian plain, the chain of Monte Tifata near Capua, Monte Taburno, the chain of Monte Vergine near Avellino, the Sorrentine peninsula with Capri, Monte Alburno, the highlands of Cilento and the system of Cervicoalto near Eboli. To these we may add the volcanoes on the seashore and in the sea itself; the mountain of Roccamonfina, the Phlegræan Fields, with Ischia and Procida, Vesuvius and the trachytic Ponza Isles farther out in the sea.

These last consist of a number of islands and rocks, the fragments of a truncated cone rising from the sea. The following table gives their size and extent of coast :—

	Circumference.		Extent.	
Ponza and Cavi. . . . .	15½	miles	2 sq. m.	540 acres
Palmarola . . . . .	4½	„	250	„
Zannone . . . . .	2½	„	135	„
Ventotene . . . . .	4½	„	340	„
San Stefano . . . . .	1¼	„	72	„

Ponza is at the centre of the group; it is a crooked bow-shaped piece of land abounding in bays, with Cavi and Zannone standing on a north-eastern prolongation of the same submarine ridge. It is perhaps, the upper edge of the crater of an important volcano with smaller craters in its midst. Thus the round Bay of Ponza, five fathoms deep, is the chasm of a crater, filled by the sea. On a rock on its southern side lies the town of the same name, with 3,800 inhabitants. The highest point, where there is a lighthouse, is Monte della Guardia (942 ft.) at the extreme south of the island; it produces wine, figs, olives, southern fruits, and serves as place of detention for the worst criminals. Palmarola (Monte Guarnieri, 854 feet) has a small population and is interesting from the fact that in the eighteenth century it consisted of two separate islands, and has altered its form since. Zannone goes down precipitously to the sea, almost everywhere, and has two mountains of 600 feet and 560 feet respectively. The fifty-fathom line of the sea embraces all these islands, while the others rise farther up and from greater depths, their position connecting the Ponza Isles with Ischia. The rock of Le Botte is the remains of a submarine volcanic cone which goes down southwards to a depth of 372 fathoms before the plateau rises, on which rests Ventotene, the ancient Pandataria, and San Stefano. Ventotene is crescent shaped, 426 feet high, with a town of 2,700 inhabitants, and served as a place of banishment for the wives of the Claudian Cæsars under the early empire. San Stefano (256 feet) is a roundish eminence with a convict prison. All these islands are connected with Ischia

or Naples by a weekly steamer, and being important places of observation for fish, they have telegraphic communication with the mainland, via Cape Circeo. They are frequently visited by slight earthquakes and undergo alterations in altitude, as in the case of Palmarola.

The Phlegrean Fields to the west of Naples constitute an analogous volcanic region, but lying above the surface of the sea its forms have been better preserved and are more easily recognized. It is better



SKETCH MAP OF THE PHEGREAN FIELDS.

to consider the whole as a single volcano, the ash cone being the mountain of Camaldoli, which has a gentle descent towards the plain of Campania. Towards the interior it breaks off abruptly with the tufa walls beneath the monastery, which is visible from a great distance, and on the former crater bottom, and in place of the southern circumvallation it bears the numerous rings and volcanic ruins which make this region resemble a lunar landscape. In the sea and belonging to this, but forming at the same time independent centres of eruption, are Procida with two semicircular remains of craters, and Ischia with the once important volcano of Monte Epomeo. Numerous

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warm springs and exhalations of hot steam (Solfatara, Stufe San Germano, Stufe di Nerone) remind us that the volcanic force is not extinct, although centuries pass between its violent eruptions (the Arso in Ischia, 1302 ; Monte Nuovo, 1538). In spite of this threat the land has since ancient times resembled a wonderfully well-kept garden, bearing wine, vegetables and tropical fruits in extraordinary profusion, while the broken character of the coast and the pleasant green hills close beside the blue sea give it an indescribable beauty.

The companies of Greeks who wandered around the Mediterranean recognized this at an early period, and settled on the trachytic rocks of Cuma, it is said, 1,000 years before Christ. Their city surrounded by high vast walls of hewn stone, made still stronger by taking away some of the rock to make it more precipitous, brought the first fruits of Eastern culture to the peoples of Italy, and has thus been a place of the greatest importance in the development of mankind. Later on the Greeks founded the city of Dicæarchia on a second rock, which the Romans renamed after the warm springs in Puteoli, and which is now called Pozzuoli.

During the empire the wealthy Romans had their villas at Baiaë (Baia), and the war fleet found refuge in the lakes Lucrino and Averno after the construction of works by Augustus, as well as in the harbours of Cape Miseno. The number of ruins scattered on the shore at Baiaë, the foundations of the country houses which are constantly being brought to light as the pozzolan is removed, and the vast tunnel carried under Monte Grillo and uniting Cumæ directly with Lake Averno testify to this brilliant period.

In the Middle Ages the place was held first by the Greeks, then by Naples, and lastly by the Normans and Hohenstaufen. From the time of Pietro di Toledo the Spanish Viceroy's resided at the vast fort of Baiaë, which they built to shelter the fleet. At the present time this land, which is thickly peopled and cultivated in every corner, is connected with Naples by several lines of rail and supplies it with an important part of its provisions. A shipbuilding yard has recently been established on the shore near Pozzuoli by Armstrong & Co., the export of pozzolan has also increased, and foreign trade has given rise to great activity in this classic spot with its ruins and its interesting objects in Natural History.

The Phlegrean Fields end in the picturesque Cape Miseno, a promontory celebrated by poets of all nations, the last remains of a volcanic cone devoured by the sea. A most glorious view of sea and islands, of Campania to the Apennines, and of Capri and Vesuvius is to be obtained from its summit. In spring a thick carpet of many-coloured flowers, violets, narcissus, and anemones covers the ground,

which is shaded by chestnuts, olives and mulberries. In the sea just off the Cape lies Procida, made up of two crescents, one behind the other, with a small town of the same name and a fort—its shining white houses being visible for a great distance. Then follows the bushy trachytic rock of Vivara, and behind this Ischia.

This last is entirely volcanic and owes its existence to the eruptions of Monte Epomeo (2,660 feet), the volcanic nature of which was recognized by the Greeks, especially after 474 B.C., when a party who had made a settlement on the north-east corner were driven away by an eruption. Etna and Ischia (*Ænaria*) were brought together in the legend and were said to rest upon one of the conquered Titans, whose glowing breath burst upwards in Etna, and whose palpitations shook the neighbourhood of Cumæ. The crater of Epomeo is indeed partly filled up and imperceptible, though crescent-shaped precipices may be recognized in the middle of the island near the town of Fontana. After the stoppage of the main channel the lava created new outlets for itself and formed the trachytic cliffs of Ischia, the two secondary craters of Monte Rotaro and Montagnone, the flattened cone of Monte Tabor with its hot springs, the viscous mass whose discharge formed the dome-shaped Lacco Ameno with the hot springs of Casamicciola. In 1302 there burst forth from the flanks of Epomeo at Ischia the lava stream dell' Arso, now a brownish black mass of slags with a glorious pine forest on the ridge. The numerous earthquakes in the nineteenth century point to the probability of a future eruption near Casamicciola.

The very fertile soil has been taken into cultivation up to the precipice of Epomeo, by means of laboriously constructed terraces. Wine, oil, silk, fishing and fowling give plenty of nourishment and occupation to the inhabitants. The reputation of Ischia as a watering-place has, it is true, been injured by the danger from earthquakes; but at one time from four to six thousand visitors, Neapolitans and foreigners, used to come in the summer to spend the hot season in the shady orange groves under the fresh sea breeze, or to make use of the sulphur springs of Casamicciola and Lacco. The towns in the island encircle the northern foot of the mountain. At the east we have Ischia, with 7,000 inhabitants and an island fort used as a prison. Then comes Bagno d'Ischia, with orange gardens, mulberry plantations and a circular harbour; west of Monte Tabor lies Casamicciola, on a vine-covered hill side; it now consists partly of ivy-covered ruins and heaps of rubbish, but is inhabited by a lively industrious population (nearly 4,000). Immediately adjoining is Lacco Ameno with the famous medicinal springs (Gurgitello, Sta Restituta), and finally, on the other side of the flow of trachyte, Florio, with 7,000 inhabitants,

a town whose sufferings in the earthquake of 1883 roused much sympathy. The southern side has no towns of corresponding size, but only numerous country houses standing alone. Its coasts are steep and offer little protection against the vast waves raised by the sirocco. Ischia and Procida are thickly peopled, the former having 23,000 inhabitants to eighteen square miles, and the other 15,000 on one and a half square miles.

To the east of the Phlegræan Fields, on the last two bays and on the slope of the hill of Camaldoli, is built the city of Naples. This, the largest city in Italy, is built like an amphitheatre facing the sea and surmounted by the grey old Castle of St. Elmo. It has 536,000 inhabitants. It is called by the people "La bella Napoli," on account of its beautiful position and the open view from its upper streets over the many coloured houses, the green gardens of Posilippo and Vomero, and the blue sea crowded with ships. "See Naples and die,"<sup>1</sup> expresses the same emotion with southern exaggeration.

The Greek colony was founded on a harbour that is now silted up and partly under cultivation, but even in the time of the Romans the inhabitants had to climb from the strand to the enclosed terraces of what are now Pizzofalcone and Capodimonte. There the rectangular arrangement of the Roman streets is preserved in the Via del Duomo and the streets of Anticaglia, Tribunali, and Biagio de' Librai (see plan). A number of tombs cut in the rock, the Christian Catacombs of San Gennaro in the valley below Capodimonte, mark the northern limit of the ancient city. From the same time comes that gap of Posilippo, the renowned grotto ascribed to the magician Virgil, which formed for nearly two thousand years the means of intercourse with Pozzuoli, till twelve years ago, when, being ruinous, it was replaced by a new tunnel.

Naples was a republic under a Byzantine protectorate at the beginning of the Middle Ages, but it did not develop into the capital of Southern Italy until it came under the rule of the Hohenstaufen and the House of Anjou. Since then its position has been uncontested. The mighty walls, interrupted by massive towers with which the Angevins fortified it, entirely enclosed the old Roman city. They are partially preserved at the east end (Porta Nolana, Capuana, etc.). As inner fortresses protecting the harbour rose the mighty Castello Nuovo on the sea, and the Castel dell'Ovo constructed on the tufa cliffs and partly excavated in the solid rock. The Spaniards, especially Pietro di Toledo, created a new quarter with a network of small rectangular streets (Montecalvario), building over the east of the hill of St. Elmo, and constructing the long straight street called by the

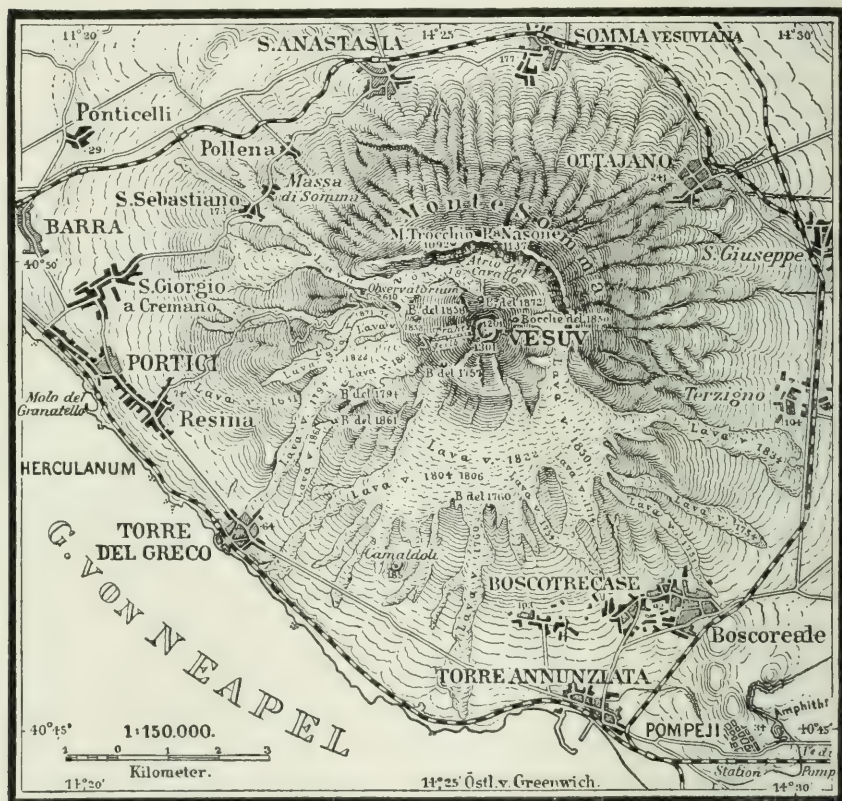
<sup>1</sup> "Vedi Napoli e poi mori."—*Trans.*

people Via di Toledo after him ; but the Pizzofalcone with its fortress, and St. Elmo, remained the western limits. Gradually the flat portions of the shore at the foot of Vomero, between St. Elmo and Posilippo, were drawn into the circle of houses, while first the low ground and then the hillside were covered with streets or with houses in their own grounds, until at present Naples reaches up Posilippo and Vomero, and what was formerly the southern strand has been converted into the beautiful promenade of the Villa Reale, where at the beginning of the seventies the Zoological Station was built at the end of an avenue of evergreen oaks and surrounded by beds of flowers. In the same way the city has overstepped its walls in the direction of Vesuvius, and new quarters have been developed on the sea shore and the hillside, especially since the railway improved the means of transit in these parts of the town.

The old town by the harbour, however, presented till lately a dense maze of narrow streets with high smoky dark houses, with damp rooms and mouldy staircases, where the poor lived crowded together, and sickness seemed to have taken up a permanent abode. The huge houses in the Roman and Spanish quarters east of the Toledo often stood upon ground that was undermined with quarries, and repeatedly showed symptoms of being about to fall in, or one or another wing of a house would sink with a crash into a hole filled with dark water. For this reason the houses in many streets were propped up within and without and against the houses opposite with gigantic beams, so that in the side streets leading out of the Strada Anticaglia, a wonderful complication of timber prevented all wheeled traffic. A similar thing was to be seen in the Courts of Justice, the Castel Capuano, which has often during recent years threatened to fall to pieces. In these narrow lanes and on the numerous flights of steps or steep inclines the life of Southern Italy is displayed most vividly. All the artizans carry on their work in the streets, through which pass the donkeys of the brawling costermongers, who sell vegetables or fish or shell-fish, the country people with cows and calves, the goatherds, the porters, and the high laden carts being dragged to the mountain by three weary beasts or brought down with provisions. The washing of the inhabitants is hung out to dry on lines stretched over the crowded streets, and in many streets this is never absent (Pallonetto di Sta. Lucia). At the harbour there are also the fishermen and fish sellers, the porters loading and unloading the ships, and there is often a deafening noise, with terrible dust in dry weather, and when it is wet the most horrible sticky mud which makes the horses fall on the slippery streets in numbers.

By the improvements after the cholera epidemic in 1884 a new

broad street (Rettifilo) has brought air into the harbour quarter, but this has by no means cured all the evils. In Naples a commencement is made from time to time in the removal of some pressing evil, but after a short time it comes to a standstill, after which the old conditions gradually return. The more vigorous control of hygiene and police introduced since 1884 has again been followed by the much loved *laissez faire*, and the city is in a fair way of sinking



SKETCH MAP OF VESUVIUS  
With the most important streams of lava.

back into its accustomed dirt. So long as it lacked the aqueduct from the Serino it was rightly considered as a hotbed of typhus, but this has somewhat improved. The higher quarters are fresher, more airy, healthier, and generally far better than they used to be.

The Corso Garibaldi, corresponding to the Via di Circonvallazione in Genoa, encircles the city above the houses along the slope of the Vomero and Elmo hills, and affords splendid views over the sea and



VICOLO DEL PALLONETTO DI SANTA LUCIA IN NAPLES.



the edge of the gulf. People of fashion drive in the late afternoon along the sea front past the Villa by the Via Caracciolo.

Naples contains a series of remarkable churches and buildings. Above all we must mention the cathedral, in which are the relics of St. Januarius, the patron saint of the city, especially his blood that liquefies. Then in the churches of Sta. Chiara and San Domenico there are the tombs of the Angevin and Arragonese rulers besides many interesting sculptures. The Archæological Museum contains frescoes from Pompeii, Herculaneum and Stabie, in rich profusion, the antique statues found in Campania, and in the upper storey a collection of the vessels useful and ornamental excavated from the dwelling houses at Pompeii during the past hundred years. This collection is unique of its kind and gives a better acquaintance with the life and ways of the ancients than long descriptions would do. On the heights above the city lies the royal castle of Capodimonte with a well wooded park, the summer residence of the Queen; the walls of the castle of St. Elmo, overtopping everything, look down on Naples, and from this the Spanish repeatedly threatened the rebellious city. Immediately below stands the Monastery of St. Martin with an elegant columned court shut off from the world, and gardens, which once covered the hillside to a great distance.

Naples is the headquarters of an Army Corps, and has a University. This was founded by the Hohenstaufen Emperor, Frederick II, and exceeds all the other universities in the number of its students (5,000), being the only one in Southern Italy. The traffic in the harbour is brisk at all times of the year, through the importation of corn, colonial goods, cotton, coal, iron, etc., and the export of wine, oil, tartar, silk, together with the emigration of agricultural labourers from the southern provinces. Many kinds of manufacture have been established here, especially in the east end near the harbour, which is conveniently situated for getting coal and raw material.

A moist depression, Le Paludi, now converted into vegetable gardens, and the little river Sebeto, separate Naples from Vesuvius. The foot of the mountain is surrounded on all sides by flourishing townships, which are continued uninterruptedly to the gulf as far as Torre Annunziata. Above that lies the zone of gardens and vineyards, then on Monte Somma and its southern fragments a region of underwood, above which rises, brownish black and devoid of vegetation, the great cinder cone. The streams of lava stretch like dark ribbons into the cultivated region, and at Portici and Torre del Greco they have often reached the sea. At sunset the cone often assumes a purple colour, at night the reddish glow of the ejected

slag shines periodically over the pinnacle, while by day a banner of smoke waves above the mountain.

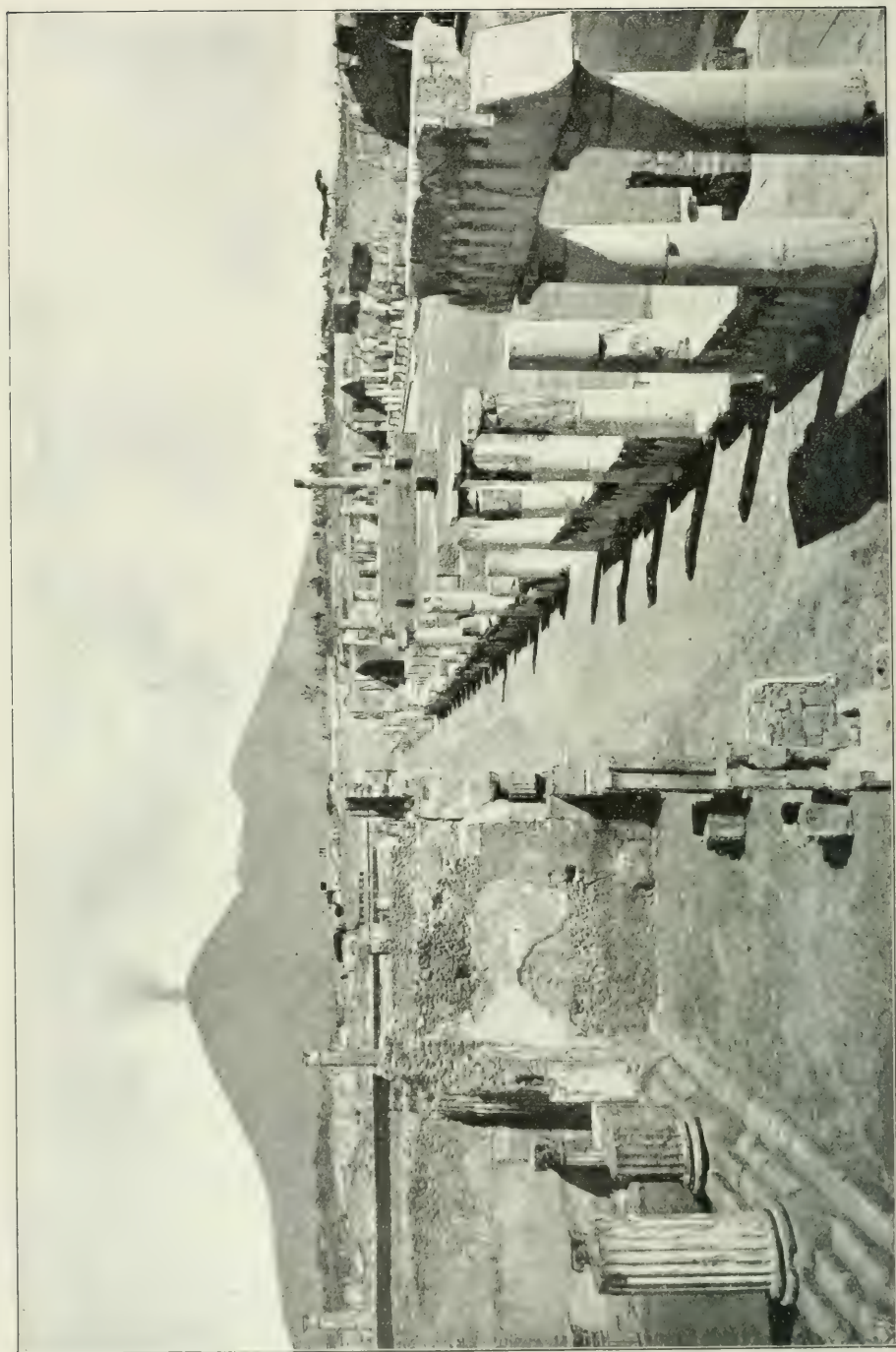
Immediately adjoining Naples is San Giovanni a Teduccio, a manufacturing suburb; a second suburb, Portici, follows, with a royal castle and a school of agriculture; a third is Resina, on the site of Herculaneum, which lies far below it under masses of débris and lava. The theatre and some few houses near the shore have been excavated by mining. The rest must remain choked up, as the lava cannot be carted away like the pumice stone of Pompeii, and the people of Resina cannot well be deprived of their property. This is a pity, as the number of bronzes found there show that apparently more is to be discovered there than at Pompeii, already plundered by the Romans. The fourth town, Torre del Greco, suffered heavily from the eruptions of 1631 and 1861. It is a busy little fishing town, with silk weaving, coral and tortoise-shell manufacture, and a not inconsiderable coasting trade.

Crossing the lavas of 1760 and 1804, and passing below the prehistoric secondary craters with the monastery of Camaldoli, we reach Torre Annunziata, a trading and manufacturing town with a good harbour and several mills driven by a canal brought from the Sarno. The straggling townships of Bosco Tre Case and Bosco Reale stand among flourishing gardens and vineyards planted with single stone pines on the south-east slope of Vesuvius, which have recently come into notice again through the discovery of silver mines; it was often threatened with lava streams in the eighteenth century, and destroyed by earthquakes, but was always rebuilt.

Between Torre Annunziata and Bosco Reale, but in a lower position than the latter, we come upon the ruins of Pompeii, built in close proximity to the river Sarno and the sea on an ancient lava stream. The town, which was elliptical in shape, has been nearly half cleared of its covering of cinders, 22 feet in thickness, as have also the amphitheatre and the whole of the city wall two miles in length. Adjacent to the right gates are streets of tombs, and part of that leading to Herculaneum has been uncovered. Our knowledge of the domestic architecture of the Romans, the use of the different rooms, the letting of the lower chambers opening on the street and separated by walls from the house proper, has been greatly extended by the discovery of Pompeii.

Several temples, a forum, two theatres, three bathing establishments and a number of tastefully furnished private houses have been brought to light in course of time. Some of those, excavated recently, have several storeys, but generally only the lower rooms have been preserved. There is much in this ancient city that vividly





FORUM CIVILE IN POMPEII.

recalls the narrow quarters of Naples : the shops, the worn paving stones, the charms against the Evil Eye, the construction of the hearth, the niches for the household gods, and even the form of the charred loaves of bread found in the ovens. The great cost of glass, however, gives a different appearance to the Pompeian houses. There are only a small number of external windows, the dwelling rooms more often open inwards on the courts of the Atrium and peristyle, where light and air enter freely together with the rain, which is received in a basin adorned with plants or with a springing fountain. At the back there is a garden with verandas. In many houses there are cellars for storing provisions. Water was distributed all over the town, both spouting from frequent street fountains and carried into the house in leaden pipes. Stepping stones aided the foot-passengers in crossing the carriage ways, which must have been very dirty, from one pavement to the other, and these must have necessitated careful driving.

The discovery of this town, which was overwhelmed by a shower of cinders on August 24, 79 A.D., took place in 1748. Charles II of Naples commenced the excavations, but it is to Murat that we owe the first systematic exploration, the laying bare of the Forum, the city walls, etc. Since 1860 Pompei has been state property. It is to be gradually cleared, a process which may indeed last a hundred years on account of the expense, for the walls, when cleared of ashes, have to be set up again, and the quarters already excavated to be protected from wind and weather. All the better pictures and loose articles are placed in the Museum of Naples. We might indicate, as a thing to be wished for, that some of the streets should be rebuilt, with all the shops and other details.

Pursuing our way round Vesuvius we come upon the lava ejected in 1834. It is lower down than that of 1754 and is called the Lava di Caposecchi from the name of the group of houses on the Sarno road, where the flow ceased. It rolled out from the Atrio di Cavallo through the Somma gap, and destroyed much fertile land. The eastern foot of Monte Somma is covered by single homesteads and groups of houses. To the north, at the exit of deep gulleys, are the populous villages of Ottajano, Somma, Sta. Anastasia. They are protected against lava by the old crater cone, but not always against cinders and shocks of earthquake. On the other hand the villages on the western side, Massa di Somma and San Sebastiano, have often suffered badly from streams of lava which, breaking out of the Atrio and flowing down north of the Observatory by way of the valley between the two villages just named, swept away the landmarks. This happened in 1855 and in 1872. The streams ejected since have been confined to the uncultivated cinder cone and the Atrio di Cavallo (1885, 1891-3, 1895).

The Campanian plain proper contains but few towns and these, such as Aversa and Caivano, are in the neighbourhood of Naples and are connected with the metropolis by tramways. The drainage is effected by the Regi Lagni, a canal running from the northern foot of Monte Somma round the Phlegræan Fields and falling into the sea south of the Volturno. The coast north of Pozzuoli has some lagoons and is a flat stretch of sand, here and there marshy and fever producing. The plain is plentifully built over, and places of importance or historic interest constantly accompany the edge of the range; these we have now to consider, beginning from the north.

Campania reaches into the valley of the Liri as far as the junction with the Sacco of Latium. In the middle section the Liri makes, to south of Sora, a waterfall, which is turned to account in the arts; it then enters the flatter district of Pontecorvo, where, among other things, tobacco flourishes well. The old Benedictine monastery of Monte Cassino stands north of the foot and high above the valley, on the slope of Monte Chiro. It accomplished much for learning and art in the early Middle Ages and still possesses a valuable library. This, as well as the building, has been the property of the state since 1860. There is a town of the same name at the foot of the mountain. The mountains south of the Liri (the Monti di Formia with Monte Petrella, 5,030 feet) form the continuation of the Monti Lepini, and cut off the bay from that of Gaeta, where the fortress is built in a commanding position on a limestone block projecting into the sea. It was once a republic under Byzantine protection, later the chief fortress of Naples, and has occasionally, as in 1848, given shelter to the Pope when driven from Rome. In 1860-61 it offered a lengthened resistance to the Sardinian troops<sup>1</sup> and has been raised into an important naval port in the Unified Kingdom.

The volcano of Roccamonfina impedes the regular flow of the Liri, its cinders covering the heights of the Apennines in the neighbourhood and filling the valleys to the depth of three feet. The mountain has forced the river to break through to the west, and before the opening of the new channel, it dammed the water into a lake in the upper section of the valley, producing a vast deposit of travertine. At the foot of the volcano lies Teano, the capital of the ancient Ager Falernus, which, like Campania, was under the rule of Etruria, and seems to have preserved traces of the period in the names of places. At Sessa, close by Teano, warm springs come to the surface, which, to judge by the remains of hot baths which have been discovered, must have been much resorted to by the Romans.

<sup>1</sup> It was defended by the Swiss Bodyguards of Francis II, not by Neapolitan troops.—*Trans.*

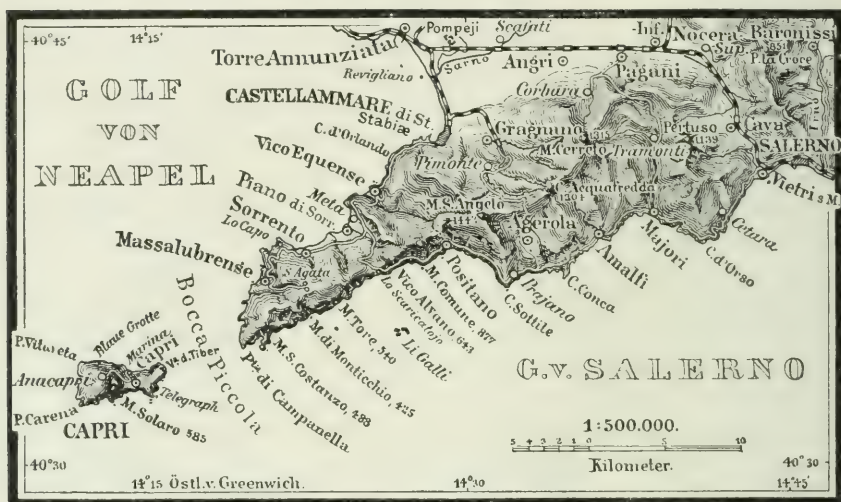
Monte Massico, an isolated limestone trunk, the counterpart of the Sorrentine chain, runs down from Sessa to the sea, and forms the northern boundary of the plain. The chains of Monte Maggiore di Pignataro and of Monte Tifata form the north-eastern edge. The Volturno rolls its brown waters in a narrow gorge from the high valley of Piedimonte-Alise and emerges at Capua. Ancient Capua is now called Sta. Maria Capua Vetere and lies some miles further south. An amphitheatre, some remains of temples, and numerous remarkable votive statues of mothers with from one to six children in their arms, alone tell us of this once flourishing city. For a long time the rival of Rome, she had to suffer severely for her adhesion to the cause of Hannibal and at a later time was more than once allotted to veteran soldiers. The present town is on a peninsula nearly surrounded by the Volturno; it is a place of arms with a powder factory and covers the best passage over the river, an important one strategically.

Caserta was founded under the Bourbon regime in the eighteenth century; it has a grand castle and a large park and was intended to become a second Versailles. Its fountains, recalling those of Wilhelmshöhe or Peterhof, are fed by a canal which brings part of the water of the Isclero from the foot of Monte Taburno in an aqueduct many miles in length to the upper end of the park over a vast series of arches, so that the waters can fall down in cascades. At present some factories and mills are worked at Caserta by the water. Ancient Caserta, a medieval township, now deserted, with a wall round it and towers with parapets, stands some miles away on a bare limestone mountain. The valley of the Isclero at Maddaloni is made use of by the railway joining Naples, Beneventum and Foggia, which then passes into the mountains past the ruins of the medieval castle. Then follow south of the valley the Caudine pass, and in front of this the necropolis of Suessula which still gives us rich booty.

The town of Cancellò stands on a spur of the mountains which projects far into the plain. Here the Neapolitan aqueduct, which is carried along the mountain side from the upper valley of the Serino at Avellino, reaches the plain. The place is at the same time an important junction for the Campanian railways. Nola and Palma stand at the ends of two similar spurs, the first founded in ancient times renowned as the town where bells were invented and as the birthplace of Giordano Bruno. High above the plain, on Monte Vergine in the Apennines, can be seen the shrine to which pilgrimages are made at Whitsuntide from all Campania. Lastly, in the angle made by the bounding range and the Sorrentine chain, we have the town of Sarno, where there are madder and tobacco growing, and spinning

mills and where strong springs gush out at the edge of the range, which then collect together and hurry past to the sea at Pompeii, between Vesuvius and the Sorrentine range.

The series of mountains between Salerno and Capri may be looked upon as a ridge between two depressions, but it is by no means uniform in construction, being formed of several Apennine chains separated by transverse valleys. One mass is made up of the mountains of Cava with Monte Albino, a second apparently of those between Gragnano and Amalfi, a third is the ridge of Monte San Angelo, the



SKETCH MAP OF THE PENINSULA OF SORRENTO WITH CAPRI.

fourth and fifth lie above Sorrento and Massa Lubrense, the sixth is below water and is indicated by the Bocca piccola, and Capri makes up the seventh and eighth. In the depressions between these fragments which stretch north-west to south-east, and on their plateaux, the ashes of Vesuvius and of the submarine volcanoes of the gulf have heaped up and caused the luxuriant fertility of the basin of Vico Equense, of the plain of Sorrento, of the depression in the middle of Capri and of the plateaux of Agerola and Ravello. Their dark orange groves and green vineyards form a sharp contrast to the stretches of barren pasture higher up and the jagged ridges covered with underwood. The soil has everywhere been protected from floods, and culture to high up on the slope has been rendered possible by carefully constructed terraces, favoured, it is true, by the moisture incident to a maritime position.

The far steeper south coast at the Gulf of Salerno descends so

precipitously to the sea that at many points agriculture is hardly to be managed. This must be indicated as one of the most glorious points in the Mediterranean, as every one will admit who has sailed along this steep wall of cliffs ending in jagged peak or vast block of limestone, or who has climbed the slopes at Amalfi, Ravello or Conca, among the vineyards and orchards.

Nocera, Scafati and Angri at the north end of the chain possess cotton mills and weaving factories. Gragnano, in a bottom, is well known for its maccheroni and for the wine from the grapes of Monte Lettere, the mountain where the Ostrogoths under Teia were overthrown in a pitched battle by the Greeks. On the sea in the neighbourhood of Stabiæ, which was destroyed by ashes, and lying among beautiful green hills, we have the seaport town of Castellammare with dockyards and a brisk trade in shipping and fish. Between the ranges appear the fertile hollows of Vico Equense and Sorrento, whose tufa cliffs break off steep at the sea and are continually being worn away by the waves. Both are favourite summer resorts, from their groves of orange trees, their romantic valleys and lonely woodland paths on the heights, but still more for their glorious views of the gulf and Vesuvius. The hilly district of Massa Lubrense seems like a single olive grove. It ends in the bare ridge of Monte Costanzo, where a temple of Minerva once rose on the extreme point of the land as a signal to mariners.

Capri, 2,602 acres in extent, rises from the waves at some distance from the mainland, but belongs to it in its whole formation. Of the two limestone plateaux of which it consists, the western is the higher, Monte Solaro rising over the central depression with precipitous cliffs and sloping slowly to the sea in a north-west direction. This form is repeated on a smaller scale by the eastern mass, whose edge, the Cliffs of Tiberius opposite Monte Costanza, rises with unusual steepness out of the sea and slopes away towards Monte Solaro. These two elevations give the island, as seen from Naples, the shape of a slipper. The beauty of Capri has been sung with enthusiasm in all languages, and the thousands of pictures have made it well known throughout the world.

Tiberius showed good taste in selecting this spot as his place of retirement, and he adorned it with all the arts of his time. He erected villas at the loveliest points, and here the moralists and opponents of the Emperor laid the scene of his crimes and vices. In the Napoleonic wars the island fell into the hands of the English and was fortified against attacks from the land. At present it is a kind of charming gigantic hotel, where all nations may be seen united in a small space and displaying their characters and their foibles.

It is only a few years ago that the two villages were connected by means of a carriage road with the landing places. Till then all traffic was on foot, by a pathway or by steps. One village, Capri, lies on the central dip, the other, Anacapri, on the western slope of Monte Solaro. Vines, figs, cacti, and olives flourish almost everywhere, but for some generations past the chief income of the island has been from the visitors who stream over unceasingly. The chief sight is the Blue Grotto, a cavern on Monte Solaro filled by the sea (see p. 70), and other caves of the kind with different surroundings and colouring are to be found around the island. The giddy precipice of the Cliffs of Tiberius marks the east end of Capri, and in the sea before it lie the grey tower-like rocks of the Faraglioni.

The south coast of the Sorrentine peninsula is so steep from the point to Monte San Angelo that there is no landing place. It is only at an enormous cost that a carriage way has been carried high up on the cliffs from Sorrento over the ridge to Positano and Praiano, and on to Amalfi, one of the most beautiful drives, as regards landscape, in the world. Positano and Praiano, on the projecting foot of San Angelo, are fishing villages with some terrace cultivation, but the means of subsistence are not sufficient for the population, who take to selling from house to house during a part of the year.

Agerola is a fruitful upland valley which has been brought into connexion with the road to Gragnona by means of a tunnel. Conca lies on the slope, with numerous houses and homesteads scattered about. Then we come to Amalfi, a crooked little town built on a narrow flat piece of sand and on the hill side, with a famous Norman cathedral. It was a powerful trading republic in the early Middle Ages, its ships carrying on trade with the Levant and competing with the Venetians. The Lombards in vain attempted to conquer the city, protected as it was by its mountains and its fleets, and the Normans were the first to subdue it and thus cut off at the roots its trade with the Byzantine empire. From that time its importance and the number of its inhabitants declined. Then earthquakes are said to have buried in the waves one quarter of the city, which was near the sea, and to have injured the harbour.

The fate of Amalfi was shared by its neighbour, Ravello, situated on a high terrace, where the fortification, the cathedral with its doors of bronze, its mosaics and Norman sculptures, recall the memory of its period of greatness in the twelfth and thirteenth centuries. The edifices erected under the influence of Arabic architecture have horse-shoe arches and onion-shaped cupolas, and is therefore of interest in the history of art (Palazzo Rufalo). Ravello produces wine and oil; Amalfi has many kinds of mills situated in romantic narrow gullies, besides some smaller macaroni and soap works.



ARCO NATURALE IN CAPRI



The town of Salerno, which gives its name to the gulf, stands in its inmost corner. It has a good harbour, some trade, and factories of different kinds in the neighbourhood, especially in the Irno Valley, which runs north into the Apennines. After the Migration of the Nations this ancient city became a Lombard Dukedom, it had then to submit to the Normans, and under them and the Hohenstaufen attained a high degree of prosperity, besides enjoying a European reputation for its school of medicine. St. Matthew the Evangelist is buried in the cathedral and also Pope Gregory VII, who died of a broken heart when flying from the German Emperor. The heights are crowned by old forts; the low hills to the southward are very fertile, and the roads along the Sele Valley to Eboli are constantly gay with country people, shepherds, cowherds, and heavily laden carts.

The Sele, one of the most important rivers of Southern Italy, flows into the sea south of Sorrento, in a three-cornered plain created by its inundations. It is fed by the springs of Cervicoalto, which rise at the foot of this limestone mountain near Caposele and it receives the Platano which flows from the lake of Bella Muro Lucano as well as the Tanagro that drains the Valle di Diano. Each affluent has had to make a way for itself by a narrow gorge out of the cauldrons of the higher range through the barrier of limestone in reaching the broad valley of the Sele. The marshy land at the mouth of the last is malarious and therefore sparsely inhabited, it serves as feeding ground for herds of buffaloes, which wallow in the swamps, and has only a few scattered farms.

At the corner opposite to Salerno lay the Greek colony of Poseidonia, called at a later period Pæstum. Rows of Doric columns, belonging to a magnificent Doric temple, rise out of a green solitude as evidence of former prosperity, and their yellow gold colouring harmonizes wonderfully with the blue sea and the dark green acanthus leaves of the ground. The massive temple of Neptune is one of the finest buildings of the ancient Greeks, and recalls the Sicilian buildings of the same period. The city walls and other constructions can also be recognized, but the best marble sculptures, columns, etc., were converted into ornaments for the churches of Sorrento in the Middle Ages, as the inhabitants, after the overthrow of the Saracens and in consequence of the increase in malaria, had evacuated the old city and had removed to Capaccio, a place in healthier air on a neighbouring hill.

At Pæstum the Apennines come directly to the sea in the highlands called Cilento, with Monte Stella (3,706 feet) and Monte Bulgheria (4,015 feet). This portion of the range is almost unexplored, pathless and inhospitable. The few harbours, such as Agropoli and Pisciotta, are unimportant, yet Velia, in Greek Elea, about the middle of the

coast line and at the exit of the valley of Vallo della Lucania, stood here, and from it the Eleatic School of Philosophy took its origin.

The Campanian Apennines may briefly be indicated as the district of Beneventum, if we neglect the sections on the edge, of which we have already spoken. Monte Matese and Monte Taburno, north-west of Beneventum, are vast isolated masses of limestone, wooded in their upper portions, between fertile depressions, of which we must specially mention the circular valley of Montesarchio because, according to the opinion of many archaeologists, it is identical with the Caudine Forks, although the extent of the valley renders this not very probable. One characteristic of the Upper Apennines, their dry, clay slopes, liable to landslips, has been already given in the Introduction.



RUINS OF THE TEMPLE OF JUNO IN SELINUNT IN SICILY.  
Showing the vast size of the Doric columns of the Greeks, like those of Pæstum.

At the place of transition from the Mesozoic limestone to the Tertiary rocks, that is at the junction of the Calore and the Sabato, we find the city of Beneventum, founded in ancient times, then a Roman colony on the Appian Way, with a triumphal arch of Trajan and the remains of an ancient theatre. In the Middle Ages a Lombard dukedom, it fell with its surroundings to the Papal See in the eleventh century, forming an enclave in the kingdom of Southern Italy (see the Historical Map in chap. x.). The city is narrow, it has a prefect, and obtains its income from the cultivation of the valleys, which debouch there. Ariano di Puglia is built high up on a mountain near the watershed between the two seas; it is the single populous town in this part of the Apennines. The other villages distributed in the



VIEW OF CAPRI.



valleys of the Calore and the Ufita as well as along the Upper Ofanto, are miserable dirty nests in the rocks, which have only had means of access given them since 1860.

Sulphur springs rise from the ground in the province of Beneventum at Telese in the valley of the Calore, and in the Lago d'Amsanto at Frigento, the first leading to the foundation of a frequented watering place. Sulphur itself is found to the south near Altavilla in the country of the ancient Hirpini, to which belongs the upper valley of the Sabato with its chief town, Avellino. This region forms a green fertile oasis in the ranges, and carries on a brisk trade with Naples. Avellino, capital of a province, has fine broad streets; it is rapidly growing in prosperity; it has many kinds of manufacture, mills and shoe factories, and is one of the few country towns lighted with electricity. The population, it is true, is considered violent, choleric and given to disturbance, which is partly due to the high imposts upon small holdings.

The sources of the Sabato and of the Neapolitan water supply lie in a lonely upland valley shut in by two mighty limestone chains. The eastern of these chains with Monte Treminio and the mass of Cervicoalto, forms a wooded range abounding in charcoal kilns, and full of barren, marshy, even unhealthy depressions, and has much of the look of the Karst in spite of the forests of beech and oak. We find just the same thing beyond the Sele valley at Monte Alburno, which vast clefts have caused to break off towards the north, terrace fashion, while it slopes gently to the south in the Valle di Diano, and its subsidiary channels. This trench forms the upper valley of the Tanagro and was once a sea bottom, which filled up with rubbish and travertine, and was then drained by the gorge of the Tanagro. The poor and unhealthy town of Sala Consilina is a centre of the traffic of the district. Near it is a famous abbey, Padula. For the rest, the road and the railway run in this depression from the Sele to the Gulf of Policastro, which they reach at the boundary of Calabria.

#### 14. CALABRIA

IN the chapter on Geology we discussed the questions how and why the southern part of the peninsula differs from the trunk, and showed that the three ranges of the Sila Forest, Monte Pecoraro, and Aspromonte have a history full of vicissitudes, being the ruins of an ancient crystalline formation. These masses and the flanks of the valley of the Crati make up the district called Calabria. Hot and marshy depressions like the bed of the Crati alternate with heights of rude climate where the snow lies till April or even May in spite of the southern

sun. Even in Reggio it may be decidedly cold in winter and early spring. Notwithstanding this, Calabria, as regards its vegetation forms the transition to Sicily.

The population in ancient times were of the tribe of the Bruttii, who were only slowly subdued by Rome, and who took part with Hannibal in the Second Punic War, enabling him to maintain himself there till just before the catastrophe of Zama. The Greeks had already settled on these coasts, and had founded rich colonies such as Croton, Sybaris, Thurii, Locri Epizephyrii, and Rhegium, but they had, as it seems, little influence on the aboriginal inhabitants.

The harbours on the Tyrrhenian and Ionian Seas had completely declined, and it was only some thirty years ago that they again began to give anchorage to some few ships engaged in fishing, coasting trade and importation of goods. After long delay a railway to Reggio, branching off from Metapontum and running along the eastern coast, was opened in the seventies, and it was not till 1892, that the Tyrrhenian line from the Valle di Diano to Reggio was completed at an enormous cost. For the interior there is a complete absence of high roads, as the towns are chiefly confined to the shore. The interior is covered with pasturage and, in the Sila, by boundless forests which give rise to an export trade in wood and charcoal.

The hot-blooded passionate population are considered uncivilized, and resemble the people of the Basilicata as regards character, education and costume, and have even had a similar destiny, having likewise received Albanian colonies (Bova). Murder and the use of the knife are everyday occurrences, as are also acts of resistance to the power of the state; and the wild mountains with their hiding places receive the guilty parties till the matter is forgotten or till an opportunity for emigration presents itself. The dark woollen mantle that can be drawn over the nose in cold weather, or when there is occasion for concealment, the high-pointed felt hat under which peep forth the fiery black eyes, or the knitted Phrygian cap of long blue wool, the calves enveloped in straps of stuff and leather or stuck into gaiters, and sandals on the feet form the well-known costume of the Calabrian shepherds and peasants. On the other hand, the costumes of the better classes, so far as they are still kept up, have a great deal of gold lace, and are rich in colour and expensive.

Calabria is one of the most earthquake-haunted regions in Europe not a single year passing without some violent shocks. All the towns have suffered more or less from this plague. Bad catastrophes took place in 1181, 1783, 1854, 1870 and 1894. In 1783 and 1894 many houses were overthrown, and in 1783 thousands of people were struck dead, swallowed up by the waves of the sea. In consequence of the

concussion, layers of later Tertiary loosened themselves from the granite and gneiss to which they were attached, forming wide rifts or sinking into the deep and burying men and buildings in the chasm, thus opened. In 1894 the alarm of famine and want of shelter was stayed with tolerable rapidity by charitable gifts from all over Europe and by the action of the state. In the previous century, however, there must have been much suffering, as towns and villages were still in ruins twenty years later.



ZONE OF THE CALABRIAN EARTHQUAKES OF 1783 AND 1894 (AFTER SUESS).

(1) *a, b, c* Crystalline nucleus of the range.

(2) The Sila.

(3) Range of Cosenza. The dotted lines indicate the main rifts, the cross shaded parts of Sicily the basaltic eruptive rocks.

From the Basilicata to the Sila the Tyrrhenian coast has only poor fishing villages. The eastern slope of the chain on the other hand, the valley of the Crati, is a country of extraordinary abundance with oranges, vines, tobacco, liquorice, prickly pears, manna and cotton. In the upper valley lies Cosenza, a town of 17,000 inhabitants, near which Alaric the Visigoth was buried in the bed of the Busento. Cosenza, surrounded by homesteads on the hills between the confluent streamlets, has been repeatedly laid in ruins by shocks of earthquake,

but has always been rebuilt. At Castrovillari, near the entrance to the valley, there are masses of gypsum and alabaster, and here and there sulphur, while at an earlier period this estuary was the site of Sybaris, so notorious for its luxury and debauchery. Destroyed by its more powerful rival Croton in 510 B.C., it disappeared from the earth entirely until 443 B.C., when the Athenians sent a new colony to this fertile spot and founded the city of Thurii somewhat further inland; a proceeding that involved them in the trade of Magna Græcia and ultimately led to the adventurous expedition into Sicily. The vast alluvial deposits of the Crati have materially raised the land of Sybaris during the last 2,500 years so that the hope is entertained of obtaining some clearer light on this important colony by means of excavations. The crystalline plateau-like mass of the Sila Forest is south of the Crati. This is accessible on the east and south-east by means of the Neto, and falls away all round from its central valley with tolerably steep slopes. The valley of the Neto is remarkable for its vegetation, for the heights abound in forest and grazing land, when the warmth has already become too great lower down. The forests yield charcoal, timber for ships and mines, and serve as hiding places for brigands, so that even in 1875 it was not wise to traverse the Sila Forest except under military protection. The chief town is San Giovanni lying about the middle. Cotrone, the Greek Croton, has an export and import trade. Here Pythagoras held his school and exercised that activity in political philosophy which has influenced the whole world. Oranges, liquorice, manna and oil flourish there in remarkable excellence, so that there is a constantly increasing traffic in the harbour. The Sila ends towards the south-east in the Lacinian and Iapygian promontories, now Capo Colonne and Capo Rizzuto. On the former rise the columns of a temple of Hera which have given it its name, there is also a shrine of the Virgin which is much honoured and has taken the place of the ancient temple.

Two deep bays, Golfo di Eufemia and Golfo di Squillace, make the land narrower south of the Sila. Above a small plain on the Tyrrhenian coast lies the town of Nicastro. Catanzaro is near the Ionic Sea on the shoulder of a plateau; it is the capital of a province, with olive woods and silkworm culture, factories of damask, velvet and woollen goods of many kinds. The region, called Central Calabria, suffers from a deficiency of labourers, as the people, owing to the low rate of wages, prefer migrating into neighbouring provinces for the season as the Poles do into Lower Saxony.

The rest of the east coast bears a dense vegetation in the lower situations; the streamlets from the mountains are, however, torrents with broad pebbly beds, each flood bringing down heaps of débris

the sides of which get overgrown with bushes and even oleanders, and at the flowering season present a glorious appearance. The wine of Calabria is heavy and sweet, reminding us of Greek wines. At Agnana, not far from Gerace, a middle Tertiary layer of lignite is being worked.

Aspromonte, with its valleys and slopes, fills up the third section. It is a land of mountains, difficult to climb, having beech woods and fir woods on the heights, and dreaded on account of its rough winds. On the western side between the gulfs of Sta. Eufemia and Gioja rises the isolated mass of Capo Vaticano, formerly a separate island, with a few townships such as Tropea, Monteleone and Pizzo, the names of which have become widely known by the devastation of the earthquakes. The waters that flow from the Pecoraro (also called Serra di Bruno or simply La Serra) and Aspromonte towards the Tyrrhenian Sea collect in the plain of Polistena, for which Palmi serves as a port. This land suffers from malaria, although the lower course of the Mesima brook is now embanked and the lower stretches of land are no longer inundated by its floods and covered by its alluvium.

At the entrance of the Straits of Messina the little town of Scilla occupies the upper surface of a cliff jutting out into the sea behind which the entrance into the Sicilian strait is narrowed to  $2\frac{1}{4}$  miles, the current becomes more violent and the whirlpool begins. A distinction is made between the ascending and descending stream, the former keeping more to the Sicilian side, the latter flowing along Calabria. The whirlpools to be found at the lighthouse in the crescent-shaped harbour of Messina, and at the place where the shore of the mainland curves near to a little north of Catona. The bottom of the narrow sea has apparently violent counter currents and should consequently consist of wide stretches of crystalline rocks, as the motion of the water would prevent any deposit of sediment (see map, p. 11).

Obliquely opposite to Messina lies Reggio, the ancient Rhegium. This city had an eventful history; it is the key of the passage to Sicily and has been alternately in the power of the Siceliots and of the inhabitants of the mainland. It is the terminus of the Calabrian coast railways, and the opportunity of crossing into Sicily is offered many times a day. Reggio being the chief town of Calabria Ulterior has a prefect and a tolerably brisk trade.

## 15. SICILY

The conditions of Sicily as regards geology, physical features, fauna and flora have been fully treated in the preceding chapters, as well as the population and language, so that here we have only to

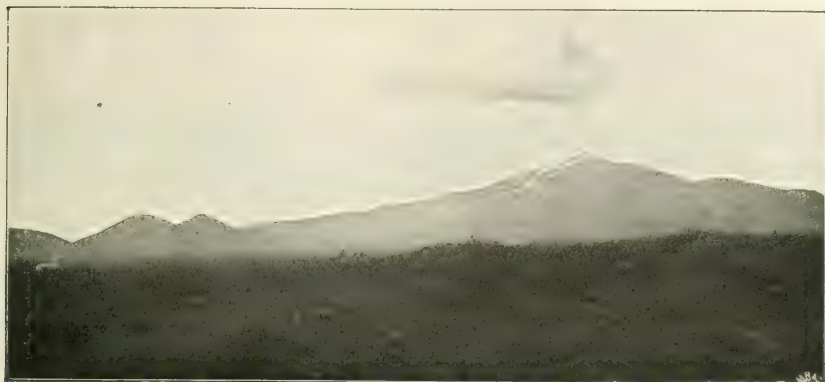
speak of the topographical details, with which a few remarks may be combined.

The Peloritan range over against Calabria occupies the north-eastern corner of the island and forms an upland country with a steep descent to the Straits of Messina, deeply scored by numerous river beds. It ends in the flat tongue of sand of Faro where a lighthouse marks the passage and has given rise to a fishing village on a lagoon. The narrow sea, formerly called *Fretum Siculum*, is now named after the town of Messina (142,000 souls in 1891), a Greek colony with Ionian and Dorian settlers (Zankle, Messana), which, like Rhegium, was a bone of contention to the rulers of Southern Italy. The city enjoys an excellent harbour formed by a sickle-shaped peninsula, it has a brisk export trade in wine and oil and still more in oranges and lemons. It is the seat of a prefect and of a University and the see of an archbishop.

Its position on the hill side at the foot of the Aspromonte range must be called a beautiful one (see full page illustration). The town itself less deserves this epithet, for its lower quarters are dirty and noisy as in every seaport town, and its higher parts have steep streets, and the narrowness of the strip of coast has caused Messina to lengthen out, having first grown towards the north and then forming new quarters to the south. A few fortifications on the heights and on the harbour crescent command the straits. There are no remarkable buildings to be mentioned as the Calabrian earthquakes have completely cleared away all the older ones. Goethe's descriptions and Houel's pictures show how fearful was the devastation in 1783.

South of Messina, the range with its bush-grown precipices and its rivulets set with oleanders comes close to the sea. Although there are scattered fishing villages along the shore and some dwellings are visible on the heights the general impression made by this part is one of desolation, until the range comes to an end near Taormina with a precipice at the Etna valley. High up, on an inaccessible limestone cliff, lay the Greek city of Tauromenium, a flourishing colony and a strong fortification which at all times offered the longest resistance to foreign intruders, and was thus the last to fall into the power of the Saracens (902 A.D.) as it had been the first founded by the Greeks (735 B.C.) in Sicily.

Mola, the type of a south Italian rock city, stands yet higher; it has a wonderful view of the sea and of the slow ascent of snowclad Etna. A similar view is to be enjoyed from the theatre of Taormina, one of the most perfect among ruins of the kind, as the stage buildings and the substructions are preserved. The scattered dwellings on the narrow plateau of Taormina, which lie among carefully cultivated



TWO VIEWS OF ETNA.



gardens and cornfields, are connected by paths and flights of steps lined with prickly pears and agaves.

Etna, which was once an insular volcano, has completely filled the surrounding sea with its lava, and its regular cone projects beyond the circle of the Sicilian mountains. Around it are the Alcantara on the north, the Simeto on the west and south-west, while it is washed by the



ETNA, WITH THE MOST IMPORTANT STREAMS OF LAVA.

sea on the east and the foot is girt by a circle of towns and luxuriant plantations of all kinds.

Then comes a broken region of forest, with chestnuts, oaks, planes and firs, till at last begins the bare cinder cone with its snow-covered head and its smoking crater. Secondary cones are scattered on the flanks, and at Adernò and Paternò even approach the base of the mountain, but are chiefly to be seen in the forest belt. On the east flank the broad barren gorge Valle del Bove has burst through, and

its system of mineral veins enables us to form conclusions as to the history of the mountain. The lava gushes out on all sides, its mass and fluidity often enabling it to reach the foot of the mountain or the sea, and the cultivated fields were frequently devastated in the ancient Greek period just as they are at the present time. From ancient times we have, of course, only information concerning the stream which affected the colonies on the coast, and the same holds of the Middle Ages, when the lava flowed into the sea and threatened Catania in the thirteenth and fourteenth centuries, especially in 1329. At the



ISLES OF THE CYCLOPES NEAR ACI REALE, OF COLUMNAR BASALT.

beginning of the seventeenth century streams of lava repeatedly flowed over the western flank, and in 1669 the southern side and Catania were devastated by a vast flow from the Monti Rossi. In the first half of the nineteenth century the lava broke through in the district of the Valle del Bove, and since 1879, when a tongue of lava was formed to the south, the lands over Nicolosi again became the point of least resistance. Lava streams from six to ten miles in length and containing from 30 to 70 millions of cubic feet are by no means rare on Etna.

The neighbourhood of the sea, the low position and the powerful effect of the sun gives important advantages to the eastern side of the mountain as compared with the other sides, and so that town follows





LANDSCAPE NEAR TAORMINA.

town, while vines, olives and agrumi (oranges and lemons) flourish luxuriantly. The triangle in the south-east, especially between Aci Castello, Nicolosi and Catania, is densely peopled and subject to most thorough cultivation. Mineral springs rise at Aci Castello, a romantic fortification on a cone of basalt washed by the sea; somewhat to the south, at Trezza, the jagged extremities of a stream of lava with regular columnar cleavage form the picturesque Rocks of the Cyclopes, which according to the legend were thrown after Ulysses by the Cyclops whom he had blinded. Nicolosi, the highest collection of houses on Etna, has been again and again rebuilt after earthquakes and devasta-



THE ANCIENT THEATRE OF TAORMINA

With a view of the cone of Etna rising with a gentle slope from the sea.

tions by cinders or lava, thanks to the unshaken courage of its inhabitants.

At the southern end we have finally the important town of Catania (112,000 in 1891), the port of export for eastern and central Sicily. The ground has been so much raised by eruptions that the remains of the Greek and the Roman city are for the most part below the surface. In 1669 the eastern quarter of the town was destroyed, a stream of lava flowing through it and raising a broad dam in the sea. Only a small part of the streets are in the plain, the greater part of them running up over the basaltic ridges. The climate is often raw

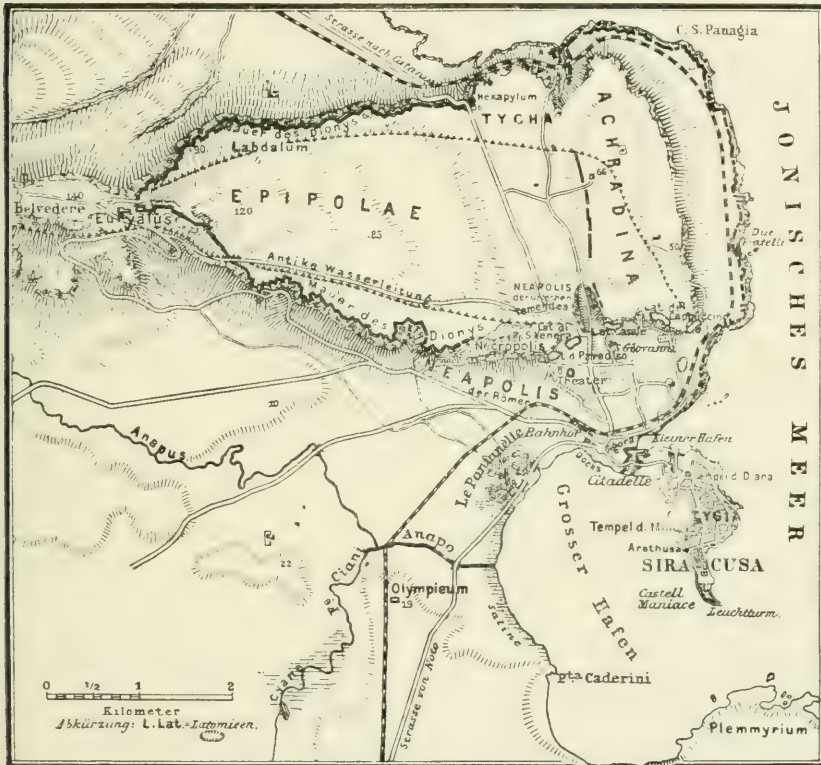
and cold in winter, and oppressively hot in summer, so that Catania is but little adapted for a health resort. Here, too, there is a prefect and a University, besides a seismological Institute, the duty of which is to make observations of the volcano in all its phenomena, and which is fitted out with excellent apparatus set up in deep underground chambers. The cathedral rises near the harbour above the ancient Roman baths: it is the burial place of many of the Aragonese rulers and also of Saint Agatha, whose intercession is said to have repeatedly diverted the lava from the town. The exports embrace principally oranges and lemons, sulphur, manna and sumach, as well as corn.

From Catania a newly completed railway runs right round the mountain. It touches first Paternò with its singular mud volcano, then Adernò standing on a platform over the Simeto valley, then Bronte with its chalybeate springs, which was destroyed in 1631 by a broad stream of lava and threatened in 1832 by two currents of basalt. Passing over the neighbouring watershed 3,200 feet high and numerous older lava streams, the railway reaches Randazzo in the Upper Alcantera valley and then runs back to the coast. Between Randazzo and Linguaglossa, close to the river, ends the narrow lava stream of 1879, over six miles long. This is more like a river in its behaviour and appearance than any other lava stream.

Passing the marshy estuary of the Simeto and Dittaino, called the Piano di Catania, we come southwards into the country of Lentini, with a lake surrounded by later Tertiary hills, and an alluvial plain (Pantano di Lentini) formed of the débris brought down by the Fiume Barbagiani and the sands of the sea. Further south the shore is carried eastward by the outlying Monti Erei, and shows many basaltic emissions. The town of Augusta, small and with narrow streets, is on a narrow peninsula on the northern side of a wide bay: it is one of the naval ports of Italy. Not far off on the sea shore the ruins of the Dorian colony of Megara Hyblæa are to be found, and at present the flat strand is used for obtaining salt in extensive *saline*, the white salt heaps standing along the water's edge and on the low embankments from springtime onwards.

The position of Syracuse is similar to that of Augusta. At present, as when it was first founded, this city only covers the peninsula or island of Ortygia, an elliptical projection of the later Tertiary plateau, to which the Peninsula della Maddalena (Plemmyrium) stretches forward from the other side so as to make a protected harbour, the Porto Grande. There is a smaller basin, the Porto Piccolo, north of Ortygia, at the edge of which can still be recognized in the rocks at the bottom the deep marks of the dockyards of the ancient Greeks. Syracuse had an

eminently good position for commerce and attained a high degree of prosperity soon after its foundation. As the small island of 125 acres was no longer large enough for the increasing number of its inhabitants, the neighbouring plateau of Achradina was taken in, and under the tyrant Dionysius I, from 402 to 385 B.C., the whole triangular table-land of limestone as far as its point, Euryalus, was surrounded with a wall of ashlar, so that the precincts of the town contained 7,000 acres. At the apex as a kind of outwork stood the fortress of Euryalus



PLAN OF THE ANCIENT AND THE MODERN SYRACUSE.

and the subterranean storechambers and stables; the tombs cut in the solid rock and the gates flanked with towers have been well preserved to the present day.

Syracuse was for centuries long the outpost of Greece in the contest with the Carthaginians, and successfully resisted the menaces of these enemies on many occasions. It is true that these conditions required a firmer concentration of all her forces than was possible in a free community and that they led again and again to the establishment

of a tyranny. Despots like Hiero I and Dionysius I extended the renown and the influence of Syracuse over nearly the whole of Sicily and part of Magna Græcia. The attempt made by Athens to subdue this Dorian colony and to substitute its own power for that of Syracuse failed miserably (413 B.C.). Syracuse must have been a large city with several hundred thousand inhabitants, like Agrigentum on the south coast of Sicily, or Carthage, although the whole space enclosed by the walls was scarcely covered with houses. At present only cornfields and kitchen gardens, meadows or olive plantations are to be found in the upper town. Between these go the ancient aqueducts, and deep cart ruts or rectangular ditches on the ground mark the sites of streets or houses. All is laid low or in ruins, whether by the hand of man or by earthquakes which proceed every year from the Monti Erei (see map, p. 66) so that only the works cut out in the rock have been well preserved to tell us of the architecture of the city, its brilliancy and its populousness. At the precipice of Achradina and the elevated plain called Neapolis lie the ancient theatre and amphitheatre, then the deep perpendicularly cut quarries (*Latomie*) from which the material was taken for the walls and temples and in which for eight months the Athenian prisoners of war were immured. At present these *latomie* make wonderfully beautiful orange groves, their coolness and shade being most refreshing after the hot bare precipice and dusty roads. Thirdly the burial chambers can be made out with tolerable facility in the soft rock. Above the Greek theatre a street of tombs cut deep in the living rock leads up to the top, and south of Achradina have been discovered the ramified subterranean catacombs of the Christians besides smaller burial chambers.

In the Middle Ages the city was again confined to the island, which was fortified with walls and towers and at a later time with bastions. Its streets are narrow and dark, and are insufficient for the increasing trade, so that a part of the wall has been razed and a small suburb has grown up on the space thus obtained. The *Arethusa*, a spring of fresh water which rises at the edge of Ortygia at the sea level, or even in the sea itself, still flows indeed as in ancient times, when the remarkable way in which this fresh water rose close to the sea gave rise to many legends, but it has become somewhat brackish owing to earthquakes. The trade consists in the export of agricultural produce, salt and sulphur, and the import of colonial goods, coals, cotton, and raw wool. The ancient aqueducts, which have been repaired, drive several mills, and the regular stream of foreigners in autumn and spring brings much ready money among the people.

The south-eastern corner of Sicily is a hilly country, rich in oranges

and lemons, almonds, sugar cane, sumach, and wheat. The soil is clay, limestone or basalt, traversed by valleys, some wide, some gully-like, and with forests of chestnuts and planes on the highest parts at Monte Laura. The more important towns are Noto, Modica, Ragusa, Vittoria and Terranova. The Greeks had settled this part of the island in several places and had founded the colonies of Gela, near Terranova, on a somewhat isolated limestone plateau, and Camarina, south of Vittoria. Asphalte is dug near Ragusa. Tunny, anchovy and sardines are taken on the coast, some ninety and sixty tons respectively of the last two being caught and cured annually. The production of oil is very important, employing nearly 500 firms and 2,500 workmen. The layers of sulphur begin at the north and west foot of the Monti Erei, and stretch through the provinces of Caltanissetta and Girgenti. At Palagonia and Niscemi emanations of gas and mud volcanoes appear in connexion with the sulphur, but of these we have already spoken (p. 71).

The South of Italy is a land of terraces, with deep watercourses, entirely dry in summer, whose level surfaces are chiefly used for growing corn. There are scattered homesteads, shaded with trees, lying far apart, while the population is concentrated in numbers of hamlets on the crests of the hills. Millions of olives are distributed among the cornfields and afford the only shade against the summer sun, and their dark green colour gives to the landscape along the coast its peculiar stamp. Singular excavations may be observed on the sides of the valleys at many points between Syracuse and Castelvetro, which are said to have been the work of the Siculi or the Sicani. Sometimes the cliff is honeycombed and cut into many storeys one above another (see p. 442); the small chambers vaulted like a baker's oven discovered at Noto on the Cassibile, are held to be the most ancient, and come from a time earlier than the walls of Mycenæ, while the later chambers are wider and more rectangular, having traces of foreign art. These burial places were made use of again at a later time, and served as dwellings or hiding places.

The hill sides by Girgenti and Racalmuto look very similar, the cause of which lies, it is true, in the modern sulphur mining, as many short galleries and trial works are erected in getting at the layers of gypsum or sulphur. The railway through the middle of the island from Girgenti to Catania runs for almost its whole length across the sulphur district, and passes the towns of Grotte, Racalmuto, Canicatti, and Caltanissetta, where the most important mines are. Sulphur is also obtained further north on the Palermo line, near Casteltermini and Lercara. On account of the economical importance of this mineral the State has established a school of mines and a superintendence

office for the supervision both of large and small mines. The sulphur is exported from Licata or from Porto Empedocle on the south coast, two small but good harbours, the latter of which has been improved by a dam made out of the ruins of an ancient temple (see pp. 173-6).

Girgenti, the capital of the province of the same name, is on a secure pedestal of rock somewhat inland from Porto Empedocle. The present town covers the space of the citadel of ancient Agrigentum, while the extensive site of the ancient city, surrounded with walls and protected by precipices, has been converted into corn-fields. On a terrace of rock from one and a half to two miles in length we see a row of vast Doric temples or their ruins. This colony, founded by Gela (582 B.C.), soon subdued the whole of the central zone of the island as far as the north coast, and seems to have been rather a land than a sea power. Although it must have contained more than 100,000 people in the time of its prosperity, it finally fell into the hands of the Carthaginians (406), whose general plundered it and destroyed its vast temples. In spite of its having been re-established soon afterwards, it never recovered its earlier prosperity, and is now confined to the cliffs, which slope southwards.

Siculiana, with a prehistoric necropolis, is on the shore west of Girgenti, and on a rock beyond the flat stretch of coast with the estuaries of the Platani and Verdura, is the city of Sciacca. This district, unlike the rest of Western Sicily, seems to be volcanic, as there are hot springs at San Calogero. These have been used for bathing or sudatory treatment for an enormous period, so that the rocks at the foot of which they make their appearance is perforated by excavations. There are also basalts, and in the neighbouring sea emerged the volcanic island of Ferdinanda (see pp. 62-3). The coasts, too, are not infrequently troubled with earthquakes, which may belong to an independent centre, perhaps out at sea, as they are not connected with the movements of the ground caused by Etna and the Monti Erei.

Beyond the river Belice we meet with the ruins of the gigantic temple of Selinunt, vast heaps of débris, segments of columns and fragments of beams. The ancient city lay on the plateau above the sea, on both sides of the Fiume Modione, and had an acropolis that was easily defensible on a tongue-shaped promontory. Now all is waste: the site of the town is covered by scattered homesteads, and there is a heath by the seashore. The old irrigation canals have quite gone to ruins, and malaria takes up its abode there in the summer. Selinus was founded in B.C. 628, but after a short existence of some 200 years it was taken and laid waste by the Carthaginians. A few of the temples, which remind one of the architecture of the East, were

never completed ; whether the others were overthrown by earthquakes or by the hand of man is an open question (see p. 426). The metopes found there and removed to the museum of Palermo were for a long time much valued as being the best and largest specimens of the plastic art of the Greeks. Even now, when a multitude of similar sculptures have been recovered from the soil, these naïve, stiff figures make a remarkable impression, and show us with how much labour the Greeks arrived at a freer and finer representation of the human form. The quarries of the Selinuntines have been discovered on the road to Campobello, in the limestone rocks west of the town. The gigantic sections of columns, with the earth cleared away around them, but not yet broken off from the rock, teach us how the people used to make the separate parts of their buildings, and what great demands their transport must have made on the strength of man and beast.

Mazzara, once the seat of the Accademia Selinuntina, lies just where the coast of Sicily bends towards the north. The Arabs landed there in 704 in order to conquer Sicily. Further inland is Castelvetro, the chief town and centre of a richly cultivated district.

The zone of central country between Mazzara and the Golfo di Catania is a land of hills, in some places passing into mountains, especially near Corleone in the west. It is characterized by extensive cornfields, which formed the granary of Rome in the republican period. Now wheat is cultivated alternately with pulse, especially beans, and the fields are allowed to lie fallow after two years' cultivation. Extensive farms occupy large areas, so that the population is sparse and the towns far apart.

Castrogiovanni rises on a steep mountain cone at the end of the Simeto-Gornelunga valley. It is the ancient Henna, a capital of the aborigines, and but little affected by Greek influence (see illustration, p. 139.) From here one can look across the green meadows of the island as far as the snow-clad Nebrodes, the white head of Etna and the blue sea in the distance. It is to some extent the centre of Sicily, the "Navel," as the ancients expressed it, and the starting point of a radiating system of rivers. Castrogiovanni has been selected recently as a fitting point for a fortified position to protect the island from attack. A deep gorge separates it from Calascibetta, which is similarly situated. Between them, along the bottom of the ravine, runs the railway from Palermo and Girgenti to Catania.

The mountains of the central parts of Western Sicily have been a place of asylum to many foreign elements. Four communities there (Palazzo Adriano, Contessa, Piana dei Greci, and Mezzojuso) are Albanian colonies, and to the middle of the nineteenth century they kept up their showy, many coloured costume, together with many

peculiar usages, and it is said that the costume is still to be seen on high festivals.

Lombards settled in Corleone and in Nicosia in the valley of the Upper Salso. The land is rough and but little known. In ancient times it was inhabited by the Elymi, a Phœnician or Oriental tribe, who were long at feud with the Greeks, and whose capital, Egesta or Segesta, was near the modern Calatafimi. A second settlement of the same tribe is called Entella, but of this scarcely any ruins are now left, and a third, Eryx, is on Monte San Giuliano, near Trapani.



NECROPOLIS OF THE SICULI AT CASSIBILE.

This brings us again to the coast, and we will now wander along it back to Messina.

The Carthaginians possessed two fortresses in Western Sicily. To the south lay Lilybæum, at Cape Boco, on the spurs of the limestone tableland and at the extreme point of the island. The point is now called Marsala, and is generally known through its wines, which are brought thence into the market by many firms (Ingham, Florio). In order to fit this wine for keeping it is fortified with no small quantity of spirit, and is only fit to be used as a dessert wine or for invalids. The annual export amounts to from 50,000 to 80,000 bottles. Sar-

dines and tunny fish are also caught here and cured. The number of birds shot in autumn and spring is considerable, and to the north of Marsala there are numerous *saline* for bay salt (see p. 177).

In the saltbed district between the long island (I. di Stagnone) and the mainland there is a round island called San Pantaleo, the ancient Molye, round the shore of which are found Phœnician buildings. A causeway, lying now beneath the sea, connected Molye with the mainland. Changes of level must have taken place here, as at the place where Dionysius brought his fleet over a flat stretch of sand into the harbour of Molye, there now extends an arm of the sea separating the island of Stagnone, and the bay, which was originally enclosed, has now an outlet to the north. In 1860 Garibaldi landed at Marsala with his 1,000 volunteers, for the conquest of Sicily and the overthrow of the Bourbon dynasty.

Eryx, near Trapani, was the northern fortress of the Phœnicians. This town, which was called Drepanum (Sickle) in ancient times, from its shape, played a considerable part in the First Punic War. At present it is the seat of a prefecture, and is the centre of the fishing trade. A few miles north rises Monte San Giuliano (Eryx), with many ruins of the old Phœnician fortifications, a medieval fort, and at its feet the much revered shrine of the Annunziata, or Madonna di Trapani. There is an extensive view of the land, the sea, and the Isole Egadi from this point, which is naturally fortified by its isolated position and its height. There are, however, frequent fogs and mists, against which the inhabitants have to take precautions by wearing woollen hoods. The women of this mountain are considered to be specially beautiful, and we are reminded of the worship of the Phœnician goddess Astarte by the great flocks of pigeons at Eryx.

The Ægæan Islands are isolated parts of Western Sicily. In addition to a few mere rocks, we have three larger islands : Favignana ( $7\frac{3}{4}$  sq. miles), the most fertile, composed of two portions, with a dip between, and attaining a height of 1,070 feet ; Levanzo, 950 feet high, barren and producing little ; and, thirdly, Marittimo ( $4\frac{3}{4}$  sq. miles), the ancient Hiera, with Monte Falcone (2,245 feet), steep on the west but accessible on the east side. These thinly peopled islands are only important for fishing and fowling.

On the northern coast the first thing that strikes us is the Golfo di Castellammare, shut between two parallel promontories. It is analogous to the Gulf of Naples, and the promontory of San Vito resembles the Sorrentine chain on a smaller scale. The land away from the sea is fertile, and bears Sicilian garden produce. Castellammare del Golfo is the port, and the other towns of any size are Alcamo, founded by the Saracens, and Partinico. Deeper in the range, but

dependent on this port, stands the above-named Ègesta, on a plateau between the river Gaggera and a brook named Pispisa. Some ruins of the walls of a theatre and of a Doric temple, built in a deserted region on a high mountain, tell us of this city, which was originally Sty-mæan and subsequently Greek.

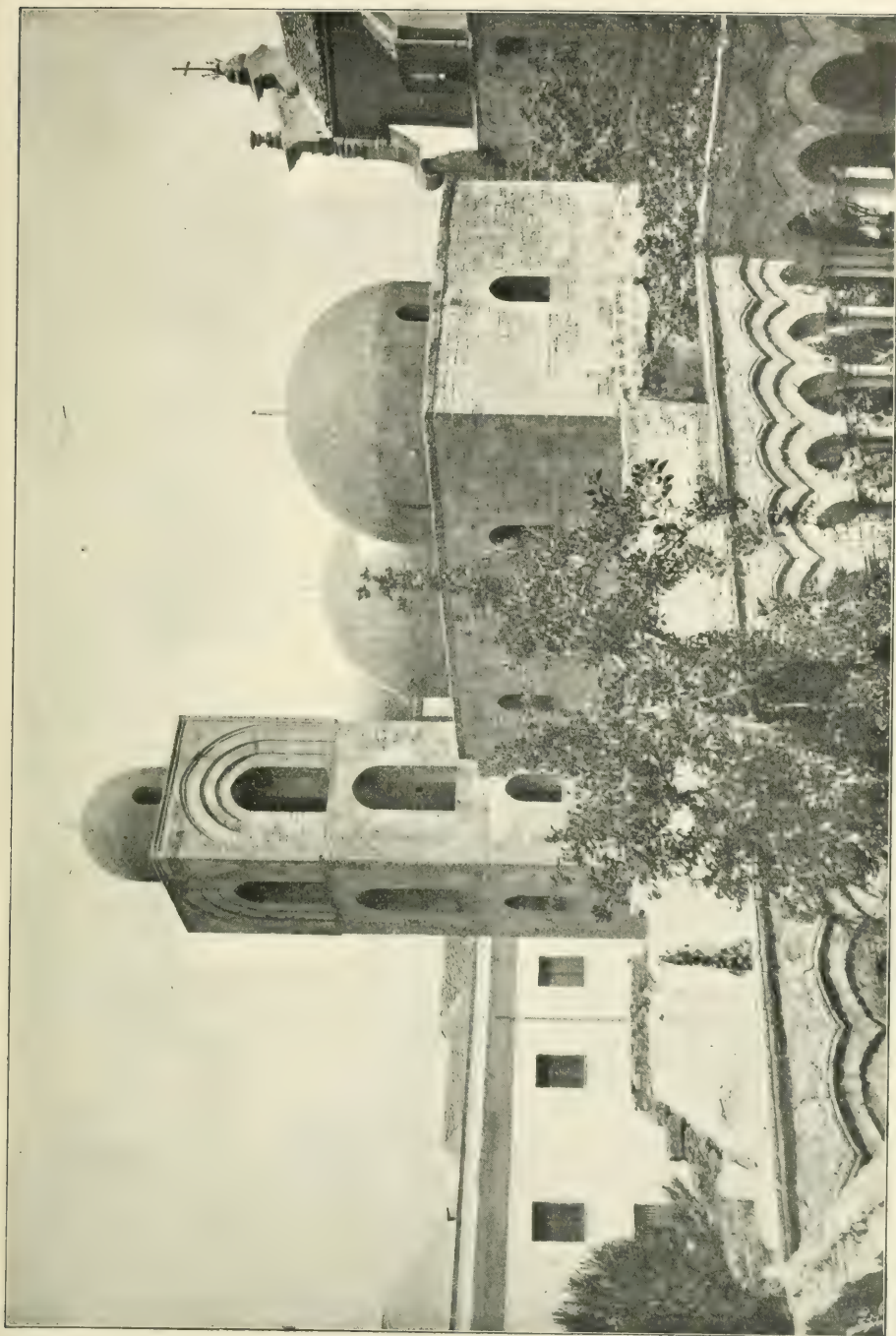
East of the gulf the land again juts out into the sea with a broad point in the mountains of Monreale, but is again curved into bays and bends back again in the Gulf of Palermo between Monte Pellegrino and Cape Zaffarano. Palermo, a town of 272,000 inhabitants is the capital of the island. It was founded on a small harbour, now to



MONTE SAN GIULIANO, OR ERYX, FROM THE ROAD TO TRAPANI.

some extent choked up, by the Phœnicians, but in spite of that it received a Greek name (Panormos), and, thanks to its position and its fertile neighbourhood, it has always been an important city. The Arabs made it their headquarters, and here Frederick II held his brilliant court, when East and West seemed to touch each other. It was here, too, that the Sicilian Vespers took place, and it was the residence of the Aragonese kings.

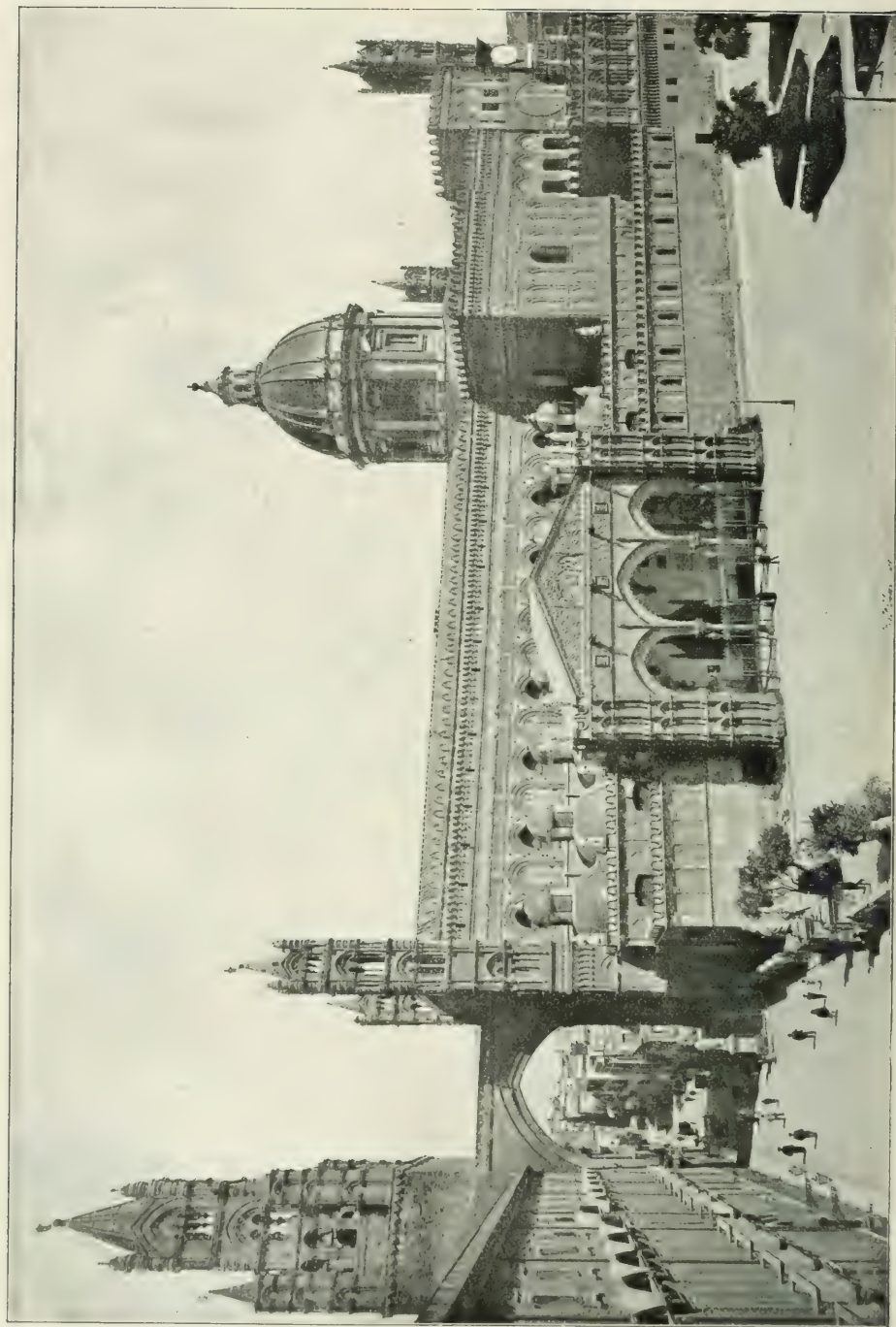
The streets, which are narrow and crooked, especially near the harbour, run from it up to the hill, crowned by the Royal Castle. The confused network of narrow streets is cut by the Via Vittorio



CHURCH OF SAN GIOVANNI DEGLI EREMITI AT PALERMO.







THE CATHEDRAL OF PALERMO.

Emanuele and Via Macqueda, which intersect at right angles at the Place of the Quattro Cantoni, just about the centre of Palermo. The ancient remains found in the course of time are kept in the museum. The chief sights of Palermo come, however, from the Arabic or Norman and Hohenstaufen period, and are remarkable as containing a mixture of Eastern and Western architecture. One of the older of these buildings (given in the full-page illustration) is the singular cupola church of San Giovanni degli Eremiti. In the Cappella Palatina of the royal castle, as well as in the church at Monreale, there is a coloured ornamentation of walls and ceilings, with Byzantine mosaics like those in St. Mark's at Venice. The Cathedral is in the Norman style, and contains the body of Frederic II in a vast bronze sarcophagus. The elegant style of building in the monasteries of Sicily, with their shady pillared courts, is seen in the cloister of the Benedictine Convent at Monreale, one of the most beautiful of its kind, having two hundred and sixteen columns arranged in pairs, and all different (see illustration). Palermo has a number of splendid public gardens, with dracenas and palms, which are seen here for the first time in their full beauty, as well as many villas in the environs (Villa Tosca), with similarly luxuriant vegetation. The flatter land near the town, behind Pellegrino and girt round with mountains, is like a gigantic orange garden. This is the famous Conca d'Oro, unequalled by any spot in Italy either in fertility or in the beauty of its dusky green foliage among the grey cliffs by the dark blue sea. On one side stands the town of Monreale, with its venerable cathedral in a commanding position on projecting cliffs. On the other side, Bagheria, with its orange trees and lemon trees, marks on Cape Zaffarano the eastern end of the Gulf of Palermo. Over against this promontory rises the picturesque mass of Monte Pellegrino. It is green below, but above it is a mighty block of blue limestone, and contains, high up, the cavern where the bones of Sta. Rosalia were discovered, and where thousands of pilgrims pay their devotions every year.

A Phœnician city once lay on Cape Zaffarano; it was on a protected hill near the little town of Solanto, and its foundations and street channels have been brought to light from under a covering of refuse and plants. Elsewhere the cliffs are covered by vines and olives or the cushion of dwarf palms, fennel,<sup>1</sup> high grasses and acanthus leaves characteristic of the limestone cliffs of Sicily, until the midsummer sun burns all the herbage.

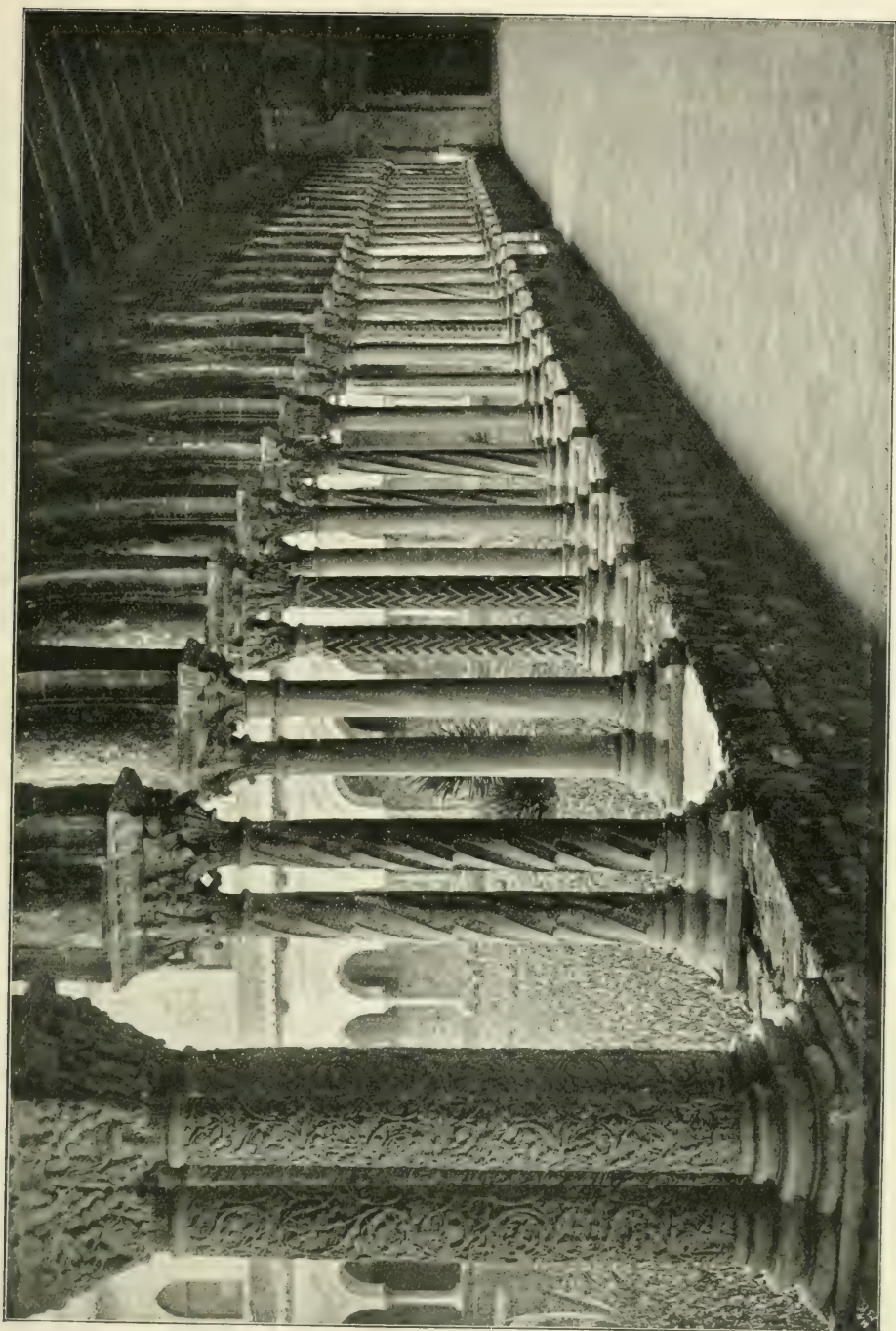
East of Cape Zaffarano the Bay of Termini Imerese cuts deep into

<sup>1</sup> *Fœniculum piperitum*, called by the Italians *Finocchio d'asino*. (Trans.)

the land just where the valley of the Torto offers the most convenient passage across the mountains by the Pass of Lercara to Girgenti, on the south coast. In ancient times this point was marked by the Grecian town of Himera, destroyed by the Carthaginians. The present town of Termini takes its name from the hot springs which gush from the fissures of Monte Calogero, and have been used for over 2,000 years, and when the tunnel for the coast line was being constructed, similar clefts were met, with warm and sulphurous waters. The place itself is a little country town with a castle, which in the Middle Ages successfully resisted the attempts at conquest on the part of foreign intruders.

On the east of this gulf the slopes of the Madonia range comes close to the sea, and on the most northerly spurs they carry the city of Cefalù, with a Norman cathedral containing many mosaics. The rest of the north coast is accompanied somewhat further inland by the Nebrodes, and the Peloritan range, whose mountain torrents rush down to the sea in short valleys. The character of the landscape resembles that between Catania and Messina, but is less rocky and bold. The larger towns, such as Mistretta and San Fratello, are some way inland, only Patti and Barcellona being on the shore. At the last town a small tongue of land juts out into the sea, which is called after the little town of Milazzo, the ancient Mylæ, and gives an excellent view over the Lipari Isles. It corresponds to Cape San Vito in its origin, as the line of cleavage connecting the Lipari Isles and Etna apparently runs south in the Bay of Patti and separates the Nebrodes from the Peloritan mountains. Wine, oil, manna, oranges and lemons are again the most important produce; myrtles, oleanders and dwarf palms cover the slopes and the sides of the valleys, while fine forests stand higher up the mountains.

The volcanic cones of the Lipari Isles are visible in clear air from all the heights of Northern Sicily. They are a stellated group with three rays, and are important mountains, rising out of the deep sea. Volcano and Lipari form the southern branch. Volcano,  $8\frac{1}{4}$  square miles, belongs to the European volcanoes with small activity, and consists of a cone (Monte Aria, 1,640 feet), with a recent crater on the northern side. From August 3, 1888, to March 22, 1890, vast clouds of ashes and showers of red hot stones were ejected. The sides are deeply scored with rain channels, some running to the sea and some into a Somma-like lake surrounded by the older mountain. On the same rift stands at present the low, regular cone of Volcanello, caused by a marine eruption in the year 183 B.C., which joined it to the island, forming two roadsteads for small ships to the east and west. There exists a long list of the eruptions of Volcano, reaching, with long



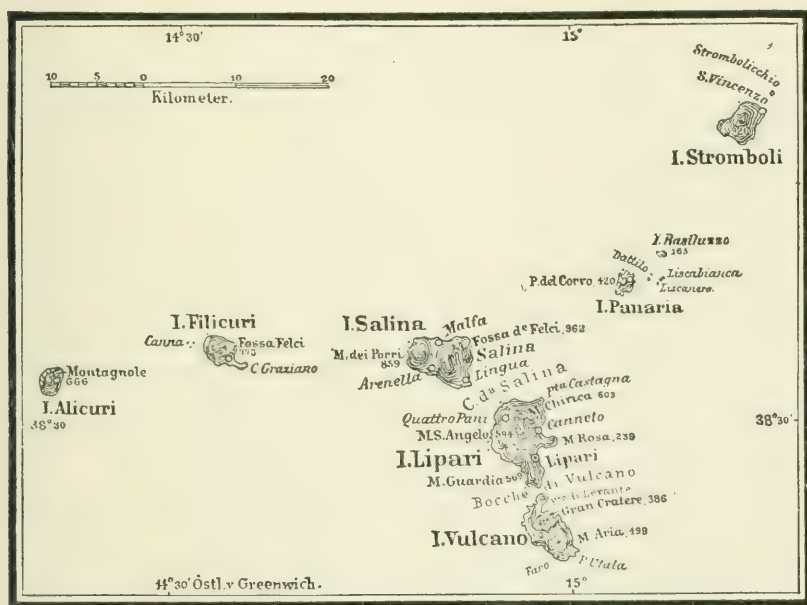
CLOISTERS OF THE BENEDICTINE MONASTERY AT MONREALE, NEAR PALERMO.



intervals of quiescence, from 300 B.C. to 1890. The island was especially active from 1737 to 1739 and in 1873-4.

Lipari measures  $14\frac{3}{4}$  square miles. It is composed of several volcanic cones, and rises with Monte Chirica 2,000 feet above the sea. Its volcanic force is only expressed in several hot exhalations ( $190^{\circ}$  F.). It is completely cultivated, it has a certain amount of trade, and in ancient times served as an important naval station, as there is a town with a serviceable harbour on the eastern side.

In the centre of the group lies Salina ( $10\frac{1}{4}$  square miles), with two mountains on a common base, the more easterly, Monte Salvatore, being 3,136 feet in height. The island derives its name from the salt pans formerly worked there. There is a town on each of the accessible sides, as the volcano is as good as extinct. From Salina the north-eastern arm of the group runs past Panaria and Basiluzzo



THE LIPARI ISLES.

to Stromboli. Panaria (600 acres) is the smallest of those which are inhabited; it is the fragment of a volcano to which perhaps Basiluzzo also belongs. This is a solitary crag, and serves with neighbouring points of rock (Lisca bianca) as a resting place for birds of passage.

The most northerly island, Stromboli, the ancient Strongyle, is remarkable for its explosions, which have recurred rhythmically for

two thousand years, and occasionally rise into actual eruptions (1891). With an area of  $3\frac{3}{4}$  square miles, the island rises in a regular cone to the height of 3,044 feet, the active crater being near the point on the uninhabited north-west side. In this, great bubbles of lava rise and burst with a noise like thunder, the red-hot slag torn away by the escaping gases flying upwards like a sheaf and falling, some of it back into the cavity, some of it on the plain of scoria (Sciara del fuoco), to roll down thence into the sea. Different observers have described this as a unique phenomenon; owing to its regularity and its magnificence when seen at night, and the vessels from Messina to Naples have the opportunity of enjoying this spectacle from a distance. It is not to be wondered at that it gave rise to many legends and myths in ancient times. The two last islands, Filicuri ( $3\frac{3}{4}$  square miles and 2,536 feet high) and Alicuri (2 square miles and 2,187 feet high) form the western ray; they are the points of large submarine cones, and are sparsely inhabited.

The whole archipelago contains  $45\frac{1}{2}$  square miles, with 18,000 inhabitants, and belongs to the Province of Messina. Its chief products are wine (Malvoisie), oil, capers and some corn. Besides these, sulphur, pumice stone, alum and boracic acid are obtained here. The last two are found in the *fumarole* and warm springs of Lipari and Volcano, the pumice comes from the tufa quarried on a large scale in 120 mines, which are difficult of access. The sulphur has hardly yet been brought into trade in any considerable quantity. These mining operations are carried on by convicts, who are banished to these islands, where they are able to enjoy a certain amount of liberty, as escape would be very difficult. There is, however, a general deficiency of good drinking water, as the springs are scanty or unusable owing to mineral admixture. Consequently, rain has to be collected in cisterns, and the water, such as it is, is made use of.

Etruscans, Greeks and Carthaginians made use of the Lipari Isles as stations for their ships, but upon Filicuri the existence of an essentially earlier population is proved by inscriptions and flint implements. At present there is regular intercourse with Palermo and Messina, and occasional communication with Naples and Calabria. Telegraph cables run from island to island, and to Milazzo, and, lastly, the lighthouses, as meteorological and seismological observatories, receive an extensive equipment of proper apparatus.

The isolated basaltic island of Ustica (probably the ancient Osteodes, bone island) lies in the sea to the north of Sicily, at a distance of thirty miles from the coast. It has two pinnacles, one being 784 feet high. It is said that the 1,700 inhabitants live by fishing and vine growing. It is governed from Palermo.

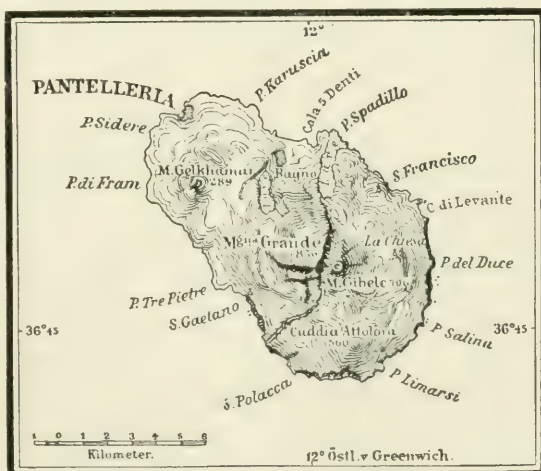
South of Sicily there still remain to be spoken of the pelagic islands, Pantelleria and the Maltese group.

The first, consisting of Lampione, Lampedusa and Linosa, are near the African coast. Lampione and Lampedusa are connected together, being the remains of a tertiary limestone plateau, and are said to derive their names from the custom of lighting fires to give warning to ships, before the construction of lighthouses. They are flat islands with steep coasts and abounding in bays, without water, with little rain and scanty vegetation. The larger, Lampedusa, with a length of seven miles, a tongue-shaped form, and a circumference of twenty miles, has an area of some 5,000 acres, a maximum height of 436 feet, and 1,000 inhabitants. The climate is equable and the temperature never higher than  $72^{\circ}$  F., but violent winds sweep over the land and prevent the growth of trees, as they blow away the vegetable mould. It is only the heavy dew and dense mists of spring that bring any moisture to the vegetation, so that the island would be uninhabitable but for the sea water that filters through the limestone, and is drawn from deep wells. These are connected with the sea, as is shown by their correspondence in the variation of level.

Settlers have repeatedly been sent to the island (1776, 1800 and 1843-4), and for a long time the colonists received a contribution in money from the State. Lampione is an uninhabited rock, steep all round, and of the same kind of soil as Lampedusa.

Linosa is somewhat better off, having rain and a fertile soil. With an area of 1,375 acres and a maximum height of 640 feet, it constitutes a basaltic plateau. There is a large crater in the south and a small one in the west, while in the north, where the Maltese had once a settlement, a group of eruptive cones is located. It only gives shelter to 200 people, and was for a long time completely neglected, the people living until 1878 in caverns. These islands also are favourite resting places for birds of passage.

Pantelleria is an island of volcanic



THE ISLAND OF PANTELLERIA.

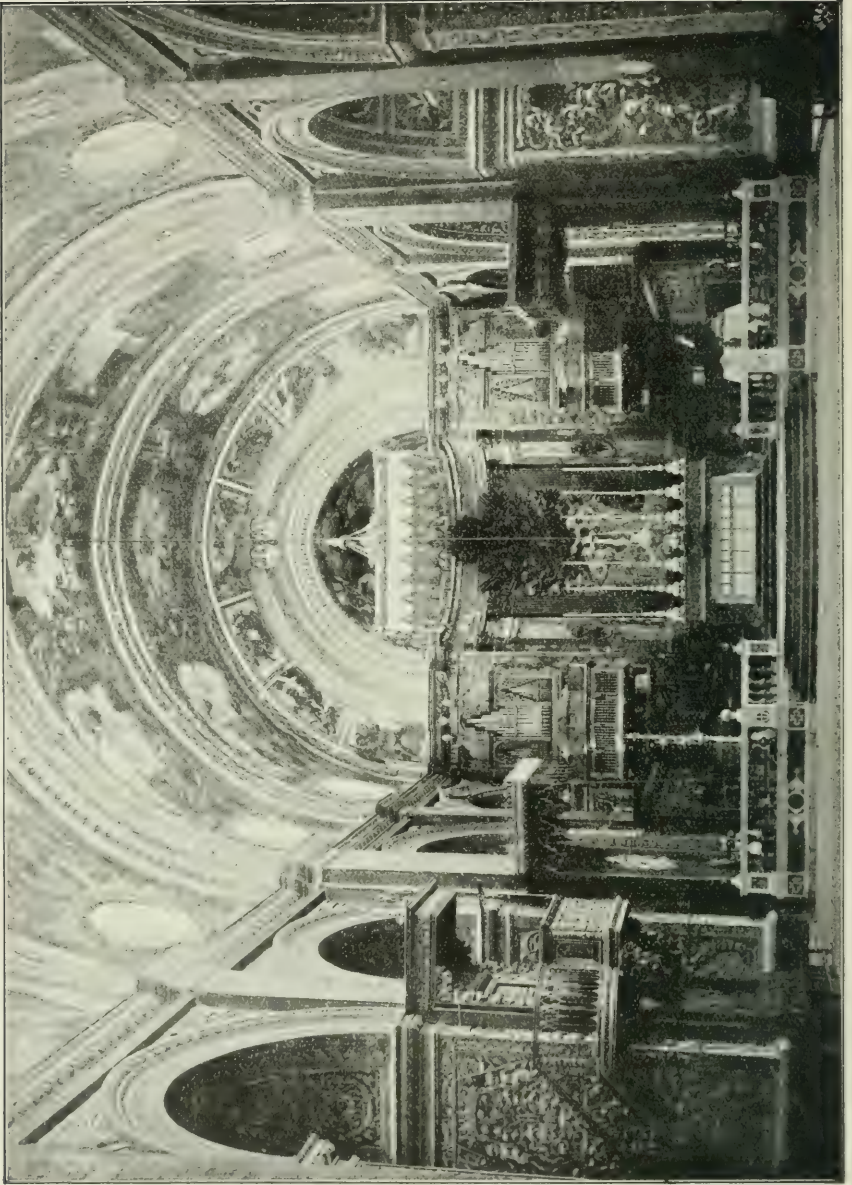
nature, lying nearer to Cape Bon than to the west coast of Sicily. It is oval in shape,  $32\frac{1}{2}$  square miles in extent, and mountainous in relief. It consists of two volcanic centres, the eastern and more recent (Monte Grande, 2,743 feet) being built up of various kinds of lava and tufa. This cone descends abruptly into the sea on three sides, and the steep flanks descend to the depth of 500 fathoms below the surface of the sea. On the fourth, or western side, it slopes down slowly, as among its products are the rocks of earlier eruptions. The lava is peculiar and strongly acid; it has received the special name of Pantellerite. A number of perfect craters and cones, distinct lava streams, and many exhalations of steam, show that the volcanic action still persists, and, indeed, a submarine eruption took place in 1891, in front of the harbour of the chief town, at the west end of the island.

The coasts are for the most part inaccessible, with steep cliffs and torn by the breakers; the land itself is very fertile, covered with plantations of vines, olives and capers, and in the higher regions with underwood or pastures, while at the very top it is bare and of a remarkable appearance, from the many-coloured tufa. Want of water is strongly felt on Pantelleria also, the steam of the fumarole being condensed with bunches of twigs and then collected. The inhabitants (7,000) follow cattle raising and agriculture; they are by descent a mixture of Saracens and Italians, and speak a Sicilian dialect with a number of Arabic words. The chief town, Pantelleria, has some 2,500 inhabitants. It lies at the north-eastern extremity, and serves among other things as a convict station. The island was colonized at an early date by the Phœnicians and Carthaginians; later on it was called Cossyra; from the ninth century it was in the hands of the Saracens, until the Genoese drove them out.

## 16. THE MALTESE GROUP

Malta and Gozzo, with Comino lying between them, form, together with a few rocks, the Maltese group of islands. They are the highest parts of a submarine tableland of limestone stretching from north-east to south-west. From a height of 846 feet above the sea in the south-west this slopes slowly towards the north-east. The southern coasts of Malta and Gozzo are consequently steep and poor in bays, while the northern shore has many good harbours between protecting cliffs. From a geological point of view, the strata belong to the Tertiary series; the scaffolding of the island is what is called Leitha limestone, on which lie more recent formations in the form of volcanic ashes and products of disintegration. The water that has trickled through





THE HIGH ALTAR OF THE CHURCH OF THE KNIGHTS OF ST. JOHN IN MALTA.

the limestone has washed out stalactite caverns in which have been found the remains of large mammalia from the time when a bridge of land existed from Sicily past Malta to North Africa. The dwarf elephants are especially remarkable; they must be looked upon as having slowly become stunted when confined to the gradually diminishing rock after it was cut loose from the continent.

The climate is already almost African in character, and the islands are very hot and are for months without rain, till in late autumn the



storms of rain begin and soak the porous rocks with moisture. This ground water feeds some springs and yields the water supply of the island, otherwise deep wells have to be sunk, or, as happens in most cases, people must be content with cisterns. On the other hand, the vegetation is quickened by heavy dew caused by nocturnal radiation. The mean summer temperature amounts to  $77^{\circ}$ , that of the winter,  $57^{\circ}$ ; the maximum,  $82^{\circ}$ ; the minimum,  $43^{\circ}$  F. The growth of trees is indeed hindered by violent winds, as on Lampedusa, but the fields and plantations are protected and the blowing away of the

valuable surface soil is prevented. Malta owes its present extraordinary fertility entirely to the industry of the inhabitants, who have broken up the dry barren shingle, and by manuring and irrigation have converted it into productive soil. Vines, figs, capers, and, above all, early vegetables for export, are planted, and have brought in rich returns since the establishment of regular steamers. Cotton also flourishes on the elevated plateaux and follows the corn or the fodder in the hot season. In autumn the land is again put under cultivation, so that it is, properly speaking, under uninterrupted tillage. Herds of goats are pastured on cliffs that cannot be ploughed. Ass and mule raising also flourishes; the animals are exported or bought by the English for use in their oriental campaigns.

The whole group of islands has an area of 126 square miles, and supports 174,000 people (1895). This gives the unusually high number of 1,380 inhabitants to the square mile. The population speak a mixed dialect of Italian and Arabic, the educated classes chiefly Italian, while the language of commerce is of course English. Italians and Arabs laid indeed the foundations of the Maltese character, but during the period when the Knights of St. John had their headquarters in the island, much foreign blood was introduced by the stream of knights from all parts of the world, at whose disposition the women of the island were placed by astonishing laws of a truly medieval character. At the present time the English soldiers are bringing in new race characteristics, as many of the soldiers marry Maltese women and become residents. The Maltese enjoy a good reputation as mariners.

These islands, lying in the middle of the passage from the Eastern to the Western Mediterranean, were colonized at an early period by the Phœnicians, of which we are reminded by a number of antiquities in the museum at La Valetta. Then the Greeks obtained a footing there and named the two islands Melita and Gaulos or Gaudos. The Carthaginians, and at a later time the Romans, established a naval station there and erected fortifications, and even in the history of the Christian church Malta is famous as the place where St. Paul was wrecked on his journey to Rome as a prisoner, and where he resided for some time. During the Migration of the Nations the group belonged to the Vandals of North Africa, and, after the destruction of their kingdom, to the Eastern Roman Empire. Then the Arabs drove out the Byzantines and had in turn to give way to the Normans. Malta became famous throughout the world when the Order of St. John settled there after its expulsion from Rhodes. The knights kept off the attacks of the Turks under Soliman I (1565) with heroic valour, and thus protected the Mediterranean from the inroads and pillage of the Mahometans who

were again advancing. In 1800 the English obtained possession of this conveniently situated plateau, and they have made of it one of their most important and best naval stations. Since the opening of the Suez Canal and the English occupation of Egypt this landing place, situated between the latter country and Gibraltar, has attained increased importance, with its coal yards, ammunition stores, arsenals and docks, all the more that the extension of the power of France in Algiers and Tunis, together with the establishment of a naval port at Biserta threatens the free passage to India.

Thus Malta is now the seat of an English Governor and the headquarters of the English Mediterranean squadron. It has a garrison of 10,000 men, among whom are 7,000 infantry, 2,300 artillery, 300 engineers and 700 Colonials. The heights to the east and west, which command the excellent harbours of La Valetta and Marsa Scirocco, are crowned with forts and armed with long range cannon of the largest calibre. A railway, eight miles in length, connects the more important points, there are sixty-five miles of telegraph, and there are submarine cables to Sicily, Gibraltar and Alexandria. The revenue and expenditure of the colony amounted to £305,000 and £302,000 respectively in 1895, the debt to £79,000. Imports £13,100,000, exports £13,200,000.<sup>1</sup> Shipping, 7,000,000 tons, without the coasting trade. For the administration the Governor is advised by a Council of eighteen members, partly elected, partly appointed by the Crown.<sup>2</sup> Ecclesiastically the islands form an Archbishopric; there is an unusually large number of clergy and monks, as many of the fraternities expelled from Italy have taken refuge on these islands. There, on English territory, they receive the Italian novices who travel to Malta for the purpose. The consequence is that, to judge from their numbers, there is at least one cowl to every house.

Malta, 91½ square miles, has a port in the east, Marsa Scirocco, which is shut in by two promontories, Ras Delimara and Ras Benhisa, and protected by fortifications in an elevated position. A whole fleet can enter the harbour and anchor there. The northern coast is much broken, both in the part near Camino and in the district of La Valetta, which is built on a tongue of land between two deep inlets. The city is erected on rocky ground, and its streets are narrow flights of stairs. It was founded by the Grand Master John de la Valette in the years immediately following the siege by the Turks (1566-71). It numbers over 70,000 inhabitants, it has a brisk shipping trade, as it is a port of

<sup>1</sup> This includes goods in transit. The actual imports were £803,000, the exports £54,000. (Trans.)

<sup>2</sup> There are twenty members, of whom six are official.

call on the way to the East and is also made use of by people going to or coming from tropical colonies as an intermediate residence for acclimatization. East of the tongue of land extends the naval port, with its arsenals and growing docks, protected by numerous batteries, to the west of it is the harbour for trading vessels, protected in the same way. The churches, the numerous knightly houses belonging to the different nations, and the statues of the Grand Masters, recall the time when Malta was a flourishing independent principality and the last remnant of medieval chivalry. The poorer people live opposite Valetta in what is called Città Vittoriosa; the old capital (Città Vecchia) lies in the interior of the island and is joined to the harbour by a railway.

Gozzo is smaller in extent than Malta and not so high ( $24\frac{3}{4}$  square miles; 16,500 inhabitants). There is an absence of deep bays and good harbours, in spite of which it is fortified and cultivated like Malta. The capital, Rabato, stands nearly in the middle.

Comino (2 square miles; 900 inhabitants) is properly only an isolated rock separated from Malta by the broad South Channel ( $1\frac{1}{4}$ – $2\frac{1}{2}$  miles broad) and from Gozzo by the narrow north channel (5 furlongs wide). These are called, collectively, the Comino channels.

## 17. SARDINIA

Of all parts of the country, including Calabria and Sicily, Sardinia has best preserved its peculiar character. Even in ancient times the island was considered as a district to itself, and was always difficult of access, so that all sorts of wonderful legends and fairy tales grew up about the island and its inhabitants. Although it gave its name to the kingdom of Northern Italy, in the eighteenth century it has been but little opened up, and till 1874 it had no railways.

Sardinia is the second largest island of the Mediterranean, measuring 9,296 square miles, with a coast line of 636 miles. The shape and the configuration of the coast, the relief and the river system have been already described. The climate is maritime with small variations. The thermometer at the inhabited coast seldom falls below the freezing point, the mean temperature at Sassari during the last ten years varying from  $44^{\circ}$  to  $50^{\circ}$ , the summer mean between  $70^{\circ}$  and  $75^{\circ}$ , though it is true the maximum reaches  $100^{\circ}$  and  $102^{\circ}$  F. This holds only of the deeper situated portions, as the mountainous parts of the interior, 6,000 feet high, of course shows lower numbers, and on Monte del Gennargentu snow falls plentifully in winter. The low-lying portions of the country, such as the region of Cagliari, with its swamps along the shore, the southern depression called Campidano, the district

of Oristano on the west coast, etc., suffer considerably from malaria.

The interior is occupied by extensive forests of oak, chestnut and larch, and supplies timber for houses and ships, besides charcoal. The highest parts offer pasturage for numerous sheep and goats, and in the oak forests pigs are reared profitably. Cotton plantations, tobacco, wine and oranges flourish in the hot regions, and there is a growing maze of orange and lemon trees on the volcanic soil of Monte Ferru, near the village of Milis, which has raised the astonishment and delight of visitors for a long time past.

The chief wealth of the island consists in the treasures of the ground—lead, silver and zinc ores, iron and manganese, and some beds of lignite, which are worth working. The best and most productive of these are found at the south end, in the neighbourhood of Iglesias, where the working has been resumed on a large scale in recent times, and where there is promise of a plentiful output for a long time to come. To judge from inscriptions, trial works and heaps of refuse that have been discovered, the Phœnicians must have prospected and smelted here zealously, but they seem only to have got as far as bringing out native silver or specially valuable silver ore, and to have neglected the vast lodes of galena. At a later time the Romans worked the mines after they had come into possession of the island at the close of the First Punic War, while in the Middle Ages, Pisa and Genoa obtained here their bars of silver and the timber for building their fleets. At present the possession and working of the Sardinian mines are almost exclusively in foreign hands, Englishmen, Frenchmen and Germans have restored activity to the mining industry that was almost extinct.

The occurrence of lignite in the neighbouring Miocene strata is of great service as it makes it easier and cheaper to raise the ore from the mine and renders it possible to smelt it on the spot. In the central parts of the island extensive beds of manganese ore have been recently discovered, which may come to be a valuable possession on account of the increasing demand for manganic steel, as soon as the ore can be brought to the coast at a low rate. Finally, the preparation of sea salt deserves mention, the shore lagoons at Cagliari in the south and Oristano in the west offering the finest opportunity imaginable for this work. A great part of the salt obtained is used in curing the sardines, anchovies and tunnies caught on the coasts.

Agriculture is said to be very backward and to be very undeveloped both as to method and yield; this is all the more to be regretted as in ancient times Sardinia produced rich crops, and in the supply of Rome with provisions held a position of almost equal importance with Sicily. The mountainous land with a small amount of plain offers, it is true, but little opportunity to agriculture in its present condition. The

most fruitful region is once more the district covered with volcanic material—the region around Monte Ferru.

Finally let us mention that Sardinia and Corsica together have



A WIDOW OF AREZZO.

nearly 150 species of plants that only occur on these islands, of which there are thirty-eight on Sardinia alone, and eighty confined to Corsica, a sign that the separation of the two mountain groups from

the mainland of Europe must have taken place at a somewhat early period. One strange animal found on the island is the moufflon. In the swamps there are flocks of herons and even of flamingoes.

The population have from olden times kept much aloof from foreign intruders, and they do not seem to have been influenced in essentials either by the Byzantine or by the ephemeral Arabic rule. Their speech has a strong resemblance to Latin, of which they have preserved to some extent the endings and the vowels, but in spite of this it has taken up something of Spanish, especially of the Catalonian dialect, as the Spaniards exercised an undisturbed dominion in Sardinia for many centuries and Catalonia is brought relatively near to the island by the bridge of the Balearic islands. Two or three principal dialects have been distinguished, which are distributed respectively north, south and east, and have again local subdivisions. These differences, and still more the variety of costume, are caused by the seclusion of the towns and the small amount of internal traffic.

The popular costumes of Sardinia have often been the object of ethnographic enquiry in recent years. The warmth of the clothing is most striking, consisting of a jacket or mantle of goatskin, which is worn even in the heat of summer, being useful as a protection against malaria. It seems to be extremely ancient as it is mentioned by Cicero. The men cover the upper part of the body with a red vest fastened at the side (*corpettu*), which is held together with a girdle and has short flaps reaching over the lower part of the body. Over that they draw either a black jacket or a white one made of lambswool with the hair inside (*bestimenti*). The legs are covered with a short kilt reaching over the knee, like those worn by the Rügen fishermen, or are put into short wide bunchy trousers, while the calves are enclosed in leather gaiters. The skin worn by the country people as mantles with holes for the arms, is called *mastruca* or *bestipedi*. A woollen cap is worn, like the Neapolitan fishermen's caps (see illustration, p. 130).

The costumes of the women depend on the age and position of the wearer, and are consequently very various. As in all these Italian costumes the principal part, as regards the upper part of the body, is played by a shirt accompanied by a coloured bodice open at the neck. Over the two is drawn a gay embroidered jacket with armholes, and the waist is wound round with coloured ribbons. There is a woollen skirt with lace at the bottom or rows of buttons at the sides. On the head they wear a veil or a cloth folded with four corners like those worn in the Apennines or near Sorrentum. Even in Sardinia, however, these dresses seem of late to be disappearing or to be in course of alteration.

Of their customs many remarkable things are told. It should not

be a matter of surprise that the women in certain circles are shut up in oriental fashion, as this occurs in other parts of the Mediterranean region. but it is strange that after the birth of a child the man lies in bed for a few moments by the side of the woman who has been con-



A MAN OF IGLESIAS.

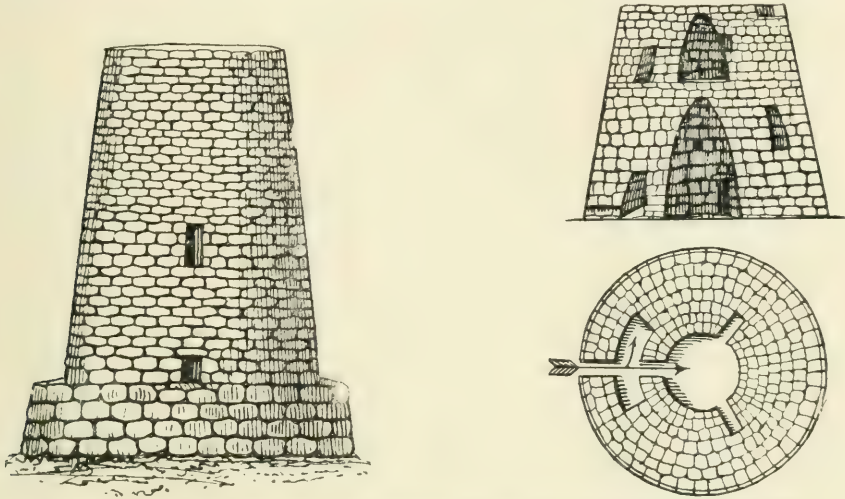
fined. as a sign of his sharing in her domestic joy, just as at a wedding the two eat off the same plate.

Revenge for blood is counted as a sacred duty, which explains the large number of murders and attempts on life. Brigandage, too, has never been fully eradicated, as criminals flee to the woods or secret

hiding places and are obliged to take to robbery to support life. Twenty years ago security was very limited, but it has somewhat improved since the revival of trade and the introduction of railways.

Foreigners, such as mining engineers, when travelling alone should not take large sums of money with them, as they might be waylaid and quietly made away with, as two Frenchmen were a few years ago.

The ancient conical buildings of huge stones or black lava, called Nuraghi, form another peculiarity of Sardinia. Over a thousand of these remains are known, sometimes standing in groups, more often alone on the heights, and constructed of large wedge-shaped blocks. In the interior they contain a single chamber or several one above another,



ELEVATION, CROSS SECTION AND GROUND PLAN OF A SARDINIAN NURAGHE.

with pointed roofs and oval in shape, which seem to be vaulted by the overlapping of the blocks, and are connected together by a spiral staircase inserted in the thickness of the walls. Who erected these remarkable towers, to what century they belong or what object they served, are still open questions. They have been looked upon by some as tombs from the finding of a skeleton in one of them, but others have held them to be fortresses, and in either case they are ascribed to unknown aborigines, who did not know how to build with mortar. As none of these Nuraghi are complete to the top it is not known whether they were terminated by a platform from which arrows could be shot or stones hurled at an enemy.

Sardinia is divided into two provinces, with the capitals, Cagliari and Sassari, at the two ends; it has 364 communes

and numbered 682,000 inhabitants in 1881, who increased to 756,000 in 1896 by official reckoning. Of these provinces Cagliari has 5,267 square miles with 88 $\frac{1}{4}$  to the square mile, and the other 4,138 square miles with only 69 $\frac{3}{4}$ , the average being 80 $\cdot$ 4, so that the island is one of the least thickly inhabited portions of the country. Means of intercourse have gradually improved since 1874 through the construction of railways. Cagliari and Sassari are connected by a line which passes Oristano and then turns aside into the interior. Sassari is also joined to Terranova in the north-east corner, with its harbour, Portotorres, on the gulf of Asinara, and with the port of Alghera. The south-west, between the depression of Campidano and the sea, is joined by mineral lines to Iglesias and Portovesme, and there are two more small lines, one from Porto Palmas into the Severa range and the other from Campidano into the nucleus of mountains containing Monte Lina. But there is an absence of good roads in the other portions of the island, especially on the east side and in the central region, so that except on the main roads, intercourse is carried on almost entirely on horseback along the ancient mountain paths and country lanes. For this reason part of the Sardinian forests cannot pay any rent, all the more as the shortness of the streams prevents the use of rafts.

The population are among the fiercest, and at the same time the most uneducated of Italy. In 1893 not a third (31 $\cdot$ 43 per cent.) of the recruits could read or write, and at the marriage ceremonies there were in Cagliari 59 $\cdot$ 24 per cent. of men and 83 $\cdot$ 11 per cent. of women who were unable to sign the register. In the province of Sassari these numbers were 54 $\cdot$ 26 and 76 $\cdot$ 14 giving an average for Sardinia of 69 $\cdot$ 04. It is seen from the table given on page 290 that in 1896 this figure had already gone down to 60 per cent. so that the popular schools are beginning to have some result. In 1892-3 there were 13,000 children being instructed in these schools. In secondary education the conditions seem remarkable, as there is a disproportionate number of higher schools, among which the private adventure schools have often only from 9 to 30 scholars. Each of the two chief towns has a university dating from the seventeenth century. They are both incomplete, having no Faculty of Philosophy, but have found a substitute in courses of technical and economical instruction. Iglesias is, as might be supposed, the seat of a school of mining, which it is true has very scanty attendance, as in 1892-3 there were only 14 pupils.

There is regular communication with the mainland by way of Palermo, Naples, Leghorn, and Genoa, ships from the first two in the south running to Cagliari, and the north being the district for imports and exports from and to the last two.

Cagliari, which lies only one degree to the east of Carthage, almost invited the Phœnicians to settle there by its wide bay with a cliff rising in the middle, and it was a flourishing city (Carales) in ancient times as we learn from the ruins that have been discovered there. This is shown by a spacious theatre hewn in the rock and by numerous tombs and burial grounds from the time of the Carthaginians to that of the early Christians. The influence of Egypt in Sardinia is very striking. It is expressed in the frequent occurrence of scarabæi of all kinds, and in the ornamentation of articles of attire.

Westward of the town stretches a swamp, the Stagno di Cagliari, separated from the sea by a long narrow zone of dunes, and frequented by flocks of birds ; its water is used in obtaining salt. At the entrance of the gulf lies the small town of Pula ; it is on the eastern foot of Monte Severa, and is interesting from its Phœnician antiquities. Monte Severa ends at the south in Capo Spartivento and Capo Teulada, and has a small bay on the west (Golfo di Palmas) which is of interest as the place where ores are shipped. In front of this south-west of Sardinia, there are two islands, San Pietro and San Antioco, and these supply the necessary protection to a second landing place at Portovesme for putting on board ship the ores from Iglesias and Monteponi. San Pietro, with its town of Carloforte, is remarkable for its recent eruptive rocks and its manganese ore, while S. Antioco hides numerous ancient ruins and is said to be fertile.

A dip between Monte Severa and Monte Lina hides the mineral treasures of Iglesias, lead, silver, and tin ores, and thus contains numbers of mines and pits on its slopes, with crushing mills, roasting furnaces and blast furnaces in the valleys, and with its miners, engineers and foreigners it is busier than any other part of the island. The more important galena mines lie at Monteponi, Malacalzetta and Masua, the zinc mines at Domus Novas. Monte Lina is also rich in iron, manganese and lead ores, as the mines of Malfidano, near Fluminimaggiore, and the mines near Arbus. All these mines are worked by joint stock companies, whose headquarters are abroad, in Paris, London, Brussels and Berlin, while the workmen must, of course, be native, on account of fever. These camp out, if it is as it was formerly, in huts of straw or reeds. Lignite, which is wanted for fuel, is obtained at Gonnesa, not far from Monteponi, a place in the possession of the neighbouring mining companies.

The trench-like valley of Campidano extends north-west of Cagliari, as far as the gulf of Aristano ; it is 44 miles in length by  $9\frac{1}{2}$  in breadth. This obviously owes its existence to a geological fault, and is filled with deposits of recent Tertiary formation. At its highest point, which lies nearly in the middle, there is a swamp, as the waters have shut off the

outflow with their heaps of débris; the brooks gush out on both sides into the gently sloping channel, flowing to the north-west and to the south-east, and finally reaching the lagoons. The Campidano is said to be in general free from fever and is in consequence cultivated like a garden.

The upland, between the Campidano and Gennargentu, through which flow the torrents Mannu and Samassi, has only recently been provided with a railway. It seems to have been one of the chief seats of the aborigines, as numerous remains of the enigmatical Nuraghi are found in the land belonging to the communes of Isili, Barumini, Mogoro and Uras.

The oval bay of Oristano marks the middle of the west coast, behind which lie several shore swamps which infect the land in summer to a great distance. Oristano, at the entrance of the valley of the Tirso, which reaches high into the range of mountains, is almost uninhabitable for this reason in the hot season, and is abandoned by all who can possibly leave. There is a lively fishery on the seashore, and corals are said to be collected there. In a high situation between two swamps near Cabras at the north end of the gulf, we again meet with several of the conical towers, and going upwards from Oristano we reach Fordogianus, the ancient Forum Trajani. Three hot springs (s'Acquas caddas) and the remains of Roman baths lead us to suspect that it was a frequented watering place. These warm waters belong to a rift running north-east from Monte Ferru, and are the last indications of a volcanic force otherwise long extinct. The mountain, called Monte Urtica, ejected various substances during the continuance of its eruptions, namely trachytes, phonoliths, basalts and leucites, the ashes and tufa of which, scattered far and wide over the neighbourhood, give it an excellent soil, recalling Campania or Monte Vulture in the luxuriance of its vegetation. Deeply scored radial valleys run in all directions, but especially towards the west, and on the blunted top can be distinguished the indistinct and nearly obliterated remains of a wide crater.

The north-western section of the island, with Sassari, bears the name of Logoduro. At the Gulf of Asinara, it runs out into the peninsula La Nurra, which is continued by the odd-shaped island dell' Asinara. Triassic limestones predominate, and they enclose, near the port of Alghero several splendid grottoes, one of which is filled by the sea like the Blue Grotto of Capri, and is only accessible by boat in calm weather through a narrow opening. The splendid stalactites hanging from the lofty roof were unfortunately shot down with a cannon some years since by the captain of a frigate. Yet one huge column, 100 feet in circumference, remains standing in the middle, round which the

fishermen occasionally perform a kind of boatman's dance by torch-light. The neighbouring Capo dell' Argentiera is rightly so called, as a rich load of argentiferous galena and zinc blend crops up near the sea. It is successfully worked by a German company and also by one from Genoa.

Sassari, in a healthier situation than its little harbour of Portotorres, is a medieval and modern city, which is specially renowned for the variety of its costumes. The carnival is said to be gay with colour,



THE STRAITS OF BONIFACIO.

and to be replete with medieval customs and dresses. The university is unimportant. The trade in wine, oil, tobacco, wool and hides is chiefly directed to Genoa and Leghorn.

Sardinia ends in the north-east in an upland named Gallura, before which, on the Straits of Bonifacio, is built on islands the sea-fortress Maddalena, one of the most important bulwarks of Italy. Caprera, which was bestowed on Garibaldi as a reward by the Unified Kingdom, also belongs to these islands. There the General spent the chief part of his later life; there he died and was buried. Occasionally, too,

Caprera served as a prison for him, as in 1867, when he was temporarily interned there under the threats of France.

The sea bites deep into the mountains and thus produces excellent anchorages. The most important of these is the fiord-shaped bay of Terranova, because the railway from Sassari terminates there, after passing along the depression between the chains of Monte Limbara and Monte D'Ala, and receiving the branch to Cagliari at Ozieri. Even at Ozieri volcanic appearances are not wanting, while there is said to be a well-preserved eruptive cone, and hot springs bubble up from the ground all around in the depth of the valley. Terranova, the ancient Olbia, was once a flourishing trading city, when the abundance of corn in Sardinia was a matter of importance for Rome, and it therefore contains many ancient mines.

The uplands along the east coast, in ancient times Barbarini, now Barbagia, are as good as unexplored. Forests and pastures, with few villages and wandering herdsmen, stamp its character. The harbours along the sea are unimportant, without excepting even Orosei on the broad gulf of the same name. The shores are unhealthy, and in spite of the mouths of the rivers, offer few means of ingress into the interior. The chief town is Nurri, a railway station, and perhaps to be in the future a centre of an iron and manganese mining district. The river Flumendosa flows to the south-east south of the Gennargentu, and has laid bare several layers of anthracite on the sides of its valley. To the south of its mouth we have Capo Ferrato, and at the eastern corner of the Gulf of Cagliari, Capo Carbonara, by which we get back to the commencement of our wanderings round the island.

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In conclusion, after having treated of the land and people of Italy without considerations of passion or of party, we may be allowed to find room for a short summary.

Italy is one of the countries that have been most favoured by nature in the mildness of her climate, the general fertility or even overproductiveness of her soil, and her favourable maritime position in the midst of the busy trade of the Mediterranean. Her shortcomings are, to a great extent, only the fault of men, as for example the drought on the heights due to the clearance of forests, the depopulation of swampy districts, which have become unhealthy through neglect of drainage. The course of history subsequent to the Roman Empire of the World, the endless wars and feuds of the Middle Ages, the division into small states and the selfish government of foreign rulers, had increased these shortcomings, while the system of large farms, the property of the Church, had kept the people in superstition and ignorance, so that the deep shadows of moral and social degeneration in the

masses stood in sharp contrast to the brilliant picture of intellectual awakening at the time of the Renaissance.

The people has set itself free from the sad and degrading conditions of the seventeenth and eighteenth centuries by its agitation for unity, and has at last created the national kingdom longed for and striven for by thousands for generations past. This kingdom, however, in consequence of its position in the world and to satisfy modern demands, has been obliged to lay heavy burdens on its citizens and has thus nullified a portion of the benefits incident to unity. The newly gained liberty, too, was not suitable to the condition of the liberated people as regards education, and thus the constitution, introduced suddenly after a foreign pattern instead of growing up historically, has brought with it many evils. Added to this is the fact that with the present system of land tenure and the low development of manufactures Italy is over-peopled, as a consequence of which the wages of labour are sinking, the prices of the necessities of life are rising, and, in spite of the intelligence of the people, neither the knowledge nor the methods in trade and agriculture stand at the high level at present required. This explains the apparent retrogression that has followed the rapid increase in prosperity during the sixties and seventies.

In spite of this, it must be strongly emphasized that the kingdom of Italy has accomplished great things during the generation for which it has existed, and that, so far as its means permitted, it has attempted to remedy the evils brought about by the course of its history. High-roads and railways have been lavishly constructed, thousands of schools have been established, rivers have been regulated, manufactures and trade have been promoted and favoured in every way. Every one will find it excusable that mistakes should have occurred in so stormy a development. In short, whoever has remained any long time in the country brings back with him the feeling that there is progress even if there should temporarily be a step backwards, and in marked contrast to other Romance nations who are sickening under dwindling population or diminishing energy, and feel that their position in the world is being threatened, Italy gives the impression of a young and powerful warrior, who either is too fainthearted or does not know how to make proper use of his powers. The duty remains for the able Royal House to clear away with a gentle hand the obstacles which stand in the way of the free development of her intellectual and material resources. Thus the motto of the Royal House, *Sempre avanti Savoia*, still possesses its full significance.



## APPENDIX I

### ITALIANS ABROAD

Europe	1881	1891
France . . . . .	240,733	295,741
Austria-Hungary . . . . .	43,875	52,198
Bosnia and Herzegovina . . . . .	726	614
Switzerland . . . . .	41,645	41,881
Roumania, Servia . . . . .	2,236	5,357
Bulgaria . . . . .	692	1,025
European Turkey . . . . .	12,268	13,526
Greece . . . . .	3,273	7,474
Great Britain . . . . .	7,189	19,196
Germany . . . . .	7,096	15,411
Other European countries . . . . .	11,195	13,932
	<hr/> 370,928	<hr/> 466,355
Africa		
Egypt . . . . .	16,302	29,000
Algiers . . . . .	33,693	15,165
Tunis . . . . .	11,106	30,000
Other Countries in Africa . . . . .	1,102	1,046
	<hr/> 62,203	<hr/> 75,211
America		
United States . . . . .	170,000	286,520
Argentina . . . . .	254,388	452,000
Brazil . . . . .	82,196	554,000
Uruguay . . . . .	40,003	100,000
Other American countries . . . . .	32,738	36,721
	<hr/> 579,325	<hr/> 1,429,241
Asia and the South Seas . . . . .	10,502	12,980
	<hr/> 1,022,958	<hr/> 1,983,787



## APPENDIX II

### LIST OF TOWNS WITH MORE THAN 20,000 INHABITANTS.

Name	Town 1871	District 1871	Town 1881	District 1881
Naples . . . . .	415,549	448,335	463,172	494,314
Milan . . . . .	199,009	261,985	295,543	321,839
Rome . . . . .	219,608	244,484	273,268	300,467
Turin . . . . .	192,443	212,644	230,183	252,832
Palermo . . . . .	186,145	219,398	205,712	244,991
Genoa . . . . .	130,269	132,521	138,081	179,515
Florence . . . . .	136,625	167,093	134,992	169,001
Venice . . . . .	128,094	128,901	129,445	132,826
Messina . . . . .	70,307	111,854	78,438	126,497
Bologna . . . . .	89,104	115,957	103,998	123,274
Leghorn . . . . .	80,914	97,096	78,998	97,615
Catania . . . . .	83,496	84,397	6,017	100,417
Ferrara . . . . .	28,509	72,447	28,814	75,553
Lucca . . . . .	21,286	68,204	20,421	68,063
Padua . . . . .	44,607	66,107	47,334	72,174
Verona . . . . .	60,049	67,080	60,768	68,741
Ravenna . . . . .	11,935	58,904		
Alessandria . . . . .	28,059	57,079	30,761	62,464
Modena . . . . .	30,854	56,690	31,053	58,058
Bari . . . . .	49,421	50,524	58,266	60,575
Reggio . . . . .	19,131	50,657		
Parma . . . . .	44,915	45,511	44,492	45,217
Brescia . . . . .	38,906	38,906	43,554	60,630
Modica . . . . .	30,032	33,169	38,390	41,231
Pisa . . . . .	25,906	50,341	37,704	53,957
Alcamo . . . . .	20,886	20,890	37,697	37,697
Foggia . . . . .	34,181	38,138	38,852	40,283
Andria . . . . .	32,676	34,034	36,795	37,182
Cagliari . . . . .	29,905	33,039	35,589	38,598
Piacenza . . . . .	34,908	34,985	34,989	34,987
Trapani . . . . .	26,904	33,634	32,020	38,231
Barletta . . . . .	27,444	28,163	31,994	33,179
Sassari . . . . .	30,542	32,674	31,596	36,317
Ancona . . . . .	28,031	45,741	31,277	47,729
Cremona . . . . .	28,679	30,910	31,083	31,930
Corato . . . . .	26,018	26,220	30,428	50,552
Pavia . . . . .	27,885	29,618	29,836	29,941
Molsetta . . . . .	26,516	26,829	29,697	30,956
Caltagirone . . . . .	22,639	25,978	28,119	32,323
Mantua . . . . .	26,687	26,687	28,048	28,048
Vicenza . . . . .	26,944	37,686	27,694	37,431
Como . . . . .	10,931	24,350	25,560	25,560

Name	Town 1871	District 1871	Town 1881	District 1881
Tarentum . . . . .	20,547	27,546	25,246	33,942
Trani . . . . .	24,026	24,388	25,173	25,647
Caltanissetta . . . . .	21,464	26,156	25,027	30,480
Ragusa . . . . .	21,494	21,546	24,183	24,341
Reggio di Calabria . . . . .	19,083	35,235	23,853	39,206
Bergamo . . . . .	22,639	37,363	23,810	39,704
Siena . . . . .	22,965	22,965	23,445	25,024
Udine . . . . .	22,004	29,630	23,254	32,020
Termini Imerese . . . . .	19,560	19,739	22,733	23,148
Bitonto . . . . .	22,993	24,978	22,726	26,207
Cerignola . . . . .	21,739	25,731	22,659	24,446
Acireale . . . . .	20,514	35,787	22,431	38,547
Salerno . . . . .	19,905	27,759	22,328	31,245
Castellammare di Stabia . . . . .	18,306	26,385	22,207	33,102
Bisceglie . . . . .	19,007	21,371	21,765	23,877
Vittoria . . . . .			21,755	23,889
Lecce . . . . .	18,460	23,247	21,742	25,934
Torre del Greco . . . . .	18,950	23,611	21,588	27,562
Partinico . . . . .	19,838	20,154	21,000	21,524
Catanzaro . . . . .	16,711	24,901	20,931	28,594
Terlizza . . . . .			20,442	20,592
Chioggia . . . . .	19,827	26,336	20,381	28,015
Aversa . . . . .	19,734	21,176	20,183	21,473
Vercelli . . . . .	20,140	27,340	20,165	28,999
Torre Annunziata . . . . .			20,060	22,013
Castelvetrano . . . . .	19,499	20,420	20,053	21,550

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(*a* refers to the upper, *b* to the lower, half of the page ; *r*, river ; *mt*, mountain ; *c*, cape ; *l*, lake ; *t*, town ; *ill*, illustration).

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